US OIL RECOVERY SUPERFUND SITE
WORK PLAN REFINEMENT/MODIFICATION NOTICE

REFERENCE DOCUMENTS: Remedial Investigation/Feasibility Study (RI/FS) Work Plan, Sampling and Analysis Plan Volume I Field Sampling Plan (FSP), Sampling and Analysis Plan Volume II Quality Assurance Project Plan (QAPP) (all dated December 23, 2015).

WORK PLAN REFINEMENT/MODIFICATION NOTICE NO.: WRN AO1-1-7
DATE: July 5, 2018

DESCRIPTION OF REFINEMENT/MODIFICATION:

This Work Plan Refinement/Modification Notice (WRN) describes the details for the work proposed for Iteration 2 of the RI/FS as initially described in the RI/FS Work Plan. Consistent with the Work Plan, this WRN provides the proposed Vince Bayou surface water and sediment sample locations, the proposed sample analyte list, and the confirmation of the sample collection methods to be used that were initially provided in the Work Plan.

Environmental Setting

Area of Investigation 1 (AOI-1) of the US Oil Recovery Site (the "Site") is located west of the confluence of Vince Bayou and Little Vince Bayou and is within the Vince Bayou Watershed. The Vince Bayou watershed is highly developed with very few open, natural areas, with a mixture of industrial and residential development within the watershed. Vince Bayou flows to the north and enters Segment 007 of the Houston Ship Channel (HSC) approximately 0.4 miles north of the USOR Property boundary. The HSC is used for navigation and industrial water supply.

In the vicinity of the Site, Vince Bayou is a low-energy, tidally-influenced perennial stream. Non-contained stormwater (i.e., overland flow) from much of the AOI-1 Property drains to the northeast, north, and northwest into Vince Bayou (Figure 1). Several small drainages that flow to Vince Bayou are present on the flat area to the north and northeast of the USOR property but are not visible on the topographic map shown on Figure 1 due to the scale of the map.

Proposed Analyte List for Vince Bayou Sediment and Surface Water Investigation

As outlined in the RI/FS Work Plan, analysis of Iteration 1 data was used to develop the Chemical of Potential Concern (COPC) list for off-property surface water and sediment sampling (i.e, sediment and surface water sampling in Vince Bayou). The resulting list of COPCs was identified to have potentially originated at the USOR Property. Due to the highly industrialized nature of the surrounding area and the numerous possible point- and non-point sources of COPCs in Vince Bayou and Little Vince Bayou unrelated to the USOR Property, it is necessary to identify the potential USOR Property-related COPCs with a thorough and complete understanding of on-property source characteristics and the transport/migration pathways off-property. A multi-step approach was used to develop the COPC list for off-property surface water and sediment, as described in the COPC List Identification Process for Iteration 2 Memo dated May 11, 2018, provided as Attachment A to this WRN. Table 1 lists the proposed list of analytes for Iteration 2.

Data Quality Objectives

As detailed below, data quality objectives (DQOs) were developed for the Iteration 2 sampling of Vince Bayou surface water and sediment to define the type and quality of the data sufficient to support the iterative evaluation of the extent of COPCs in those media and to evaluate ecological and human health risks (if any) associated with former operations at the Site. The Iteration 2 DQO process included herein

is based on, and intended to supplement, the information provided in the QAPP, particularly the parts of Table 1 of the QAPP that relate to off-property surface water and sediment.

DQO Step 1: State the Problem

Historical USOR Property information and analytical data collected to date suggest that COPCs may have migrated to Vince Bayou in connection with historical releases and/or overland runoff following storm events. Because of the gradual topographic slope at the USOR Property (Figure 1), if COPCs were transported from the property, it is anticipated that they would most likely migrate from the USOR Property to the east or north. As such, Vince Bayou surface water and sediment would be the potential endpoint of transport and migration of USOR Property-related COPCs. An understanding of COPC concentrations in, and characteristics of, Vince Bayou surface water and sediment is needed to evaluate the extent of those COPCs and the potential ecological and human health risks (if any) related to releases and/or impacts to Vince Bayou associated with previous USOR property operations. Updated Human Health and Ecological Conceptual Site Models, which include the potential receptors to be evaluated, are shown on Figures 2 and 3.

DQO Step 2: Identify the Goals of the Study

The goal of the study is to collect data iteratively (as necessary) to evaluate the extent of COPCs in off-property surface water and sediment and to facilitate the assessment of potential ecological and human health risks (if any) in those media associated with previous operations at the USOR property.

DQO Step 3: Identify Information Inputs

The data needed (i.e., the information inputs) to accomplish the goals and answer the specific study questions include soil and groundwater data review, historical release information review, evaluation of Vince Bayou surface water flow characteristics, and COPC concentration data for Vince Bayou surface water and sediment.

DQO Step 4: Define Boundaries of the Study

The spatial boundaries of the study are defined by any potential historic release pathways and by the approximate extent of soil and groundwater impacts identified during the on- and off-property soil and groundwater investigation. For sediments, the spatial boundary includes the biologically active zone (i.e., from 0-6 inches depth of sediment) and for surface water, includes the depth halfway between the surface and the bottom of the water body at the sampling point.

DQO Step 5: Develop the Analytical Approach

The initial use of the concentration data will be to evaluate the spatial extent of potential USOR-related COPCs in Vince Bayou surface water and sediment, which will be done by comparing concentration data to preliminary screening values (PSVs). PSVs are listed in the QAPP (but may be supplemented with new or other information). The second use of the COPC concentration data will be to evaluate the risk to potential human and ecological receptors (if any) in the BHHRA, and SLERA, respectively. Other data collected, such as sediment characteristics or surface water quality measurements, will be used to perform a qualitative evaluation of the bayou sediments and surface water for purposes of fate and transport evaluation and risk assessment.

DQO Step 6: Specify Performance or Acceptance Criteria

As detailed in the QAPP, the goal of this step is to reduce the probability of making decision errors. For this WRN, that goal is accomplished through use of established and consistent field, laboratory and data

validation procedures, the selection of appropriate sample locations, and use of an appropriate COPC (analyte) list based on the Iteration 1 data.

DQO Step 7: Develop the Detailed Plan for Obtaining Data

The detailed plan is described in the section below.

Proposed Surface Water and Sediment Sample Locations and Methods

Sampling locations were developed considering the following:

- The area of Vince Bayou to be sampled is a low-energy system with mild tidal influence;
- Exposure pathways to be evaluated, which are inclusive of the following potential human health and ecological receptors as identified in the Ecological and Human Health Conceptual Site Models:
    - Ecological: benthic invertebrates, fish community, mammals and birds;
    - Human Health: Off-property recreational user;
- Potential historic release pathways to Vince Bayou;
- Soil erosion and runoff to Vince Bayou from the Site, including but not limited to visible natural drainage features that drain from the Site to the bayou and storm water sheet slow runoff patterns (including the lack of drainage pathways to the east of the site into Vince Bayou upstream of the bridge); and
- On- and off-property soil and groundwater data collected for the RI/FS to date.

Table 2 summarizes the detailed rationale for sampling each of the proposed locations.

Proposed surface water and sediment sample locations are shown on Figure 4. Six locations are proposed near the shoreline adjacent to AOI-1. The sampling rationale for each sample location is presented on Table 2. Soil and groundwater data collected from soil borings and monitoring wells that are associated with the proposed sediment and surface water sample locations are presented on Table 3. Point-by-point hazard quotients, which are the ratios of the sample concentration to the applicable Preliminary Screening Values (PSVs), were calculated on Table 3. Consistent with the approach specified in the RI/FS Work Plan, the surface water and sediment samples are co-located and will be collected in sequence at each location (i.e. surface water first, sediment second).

For each of the locations, the following is proposed:

- Sample locations will be located in 2 feet of water or less;
- A surface water sample will be collected at a discrete, single depth that is as representative of the middle of the water column as possible;
- A sediment sample will be collected in the biologically active sediment zone, which is assumed to be the 0-6-inch sediment interval. The 0-6 inch interval may be revised in the field based on observations, i.e. if an abrupt change in color to dark gray or black combined with no evidence of biological activity below the color change is observed in the field before 6 inches in depth; and
- Surface water and sediment samples will be submitted to the laboratory for analysis, which will include the COPCs shown on Table 1 and described in Attachment A, and Total Organic Carbon (toc) and grain size analysis for the sediment samples. Surface water quality field parameters will also be collected, including pH, conductivity, salinity, temperature, redox potential and dissolved oxygen.

Proposed surface water and sediment sampling methods are described in detail in Section 5.5 and 5.6, respectively, of the RI/FS Sampling and Analysis Plan and in PBW SOP No. 10. Consistent with the above referenced documents, sediment samples will be collected using an Ekman grab sampler or similar. For surface water sampling, a variable-speed peristaltic pump fitted with pre-cleaned sample tubing will be used to collect samples from a point as close to the middle of the water column as possible.

As noted above, the analytical data from the surface water and sediment samples will be compared to applicable PSVs and the data distribution evaluated to assess the extent of COPCs in these media to facilitate the assessment of potential ecological and human health risk (if any). In addition, the data will be evaluated to develop recommendations for potential additional investigation activities related to Vince Bayou, which may include additional sediment and surface water sampling and/or Iteration 3, Off-Property Fish/Shellfish Investigation.

RATIONALE FOR REFINEMENT/MODIFICATION:

As outlined in the RI/FS Work Plan, Iteration 1 data were reviewed and a revised COPC list was developed for Iteration 2 so as to evaluate only those COPCs that are identified to have potentially originated at the Site. In addition, sample locations are proposed for surface water and sediment in Vince Bayou to evaluate potential risks of Site-related COPCs (if any).

Respondents' Project Coordinator: _____ Date: July 9, 2018
for Eric Pastor
Golder Associates Inc.

EPA Project Manager: _____ Date: 7/9/18
Raji Josiam

TABLES

Table 1
Proposed Analyte List for Iteration 2
WRN AOI-1-7
US Oil Recovery Superfund Site
Pasadena, TX

CHEMICAL OF POTENTIAL CONCERN (COPC)				
CHEMICAL GROUP				
METALS	**PESTICIDES AND HERBICIDES**	**SEMI-VOLATILE ORGANIC COMPOUNDS**	**VOLATILE ORGANIC COMPOUNDS**	**PETROLEUM HYDROCARBONS**
Antimony	2,4-D	1,4-Dioxane	1,4-Dichlorobenzene	C6-C12
Arsenic	2,4-DB	1-Methylnaphthalene	Benzene	>C12-C28
Barium	4,4′-DDD	2-Methylnaphthalene	Chlorobenzene	>C28-C35
Boron	4,4′-DDE	Acenaphthene		TPH
Chromium	4,4′-DDT	Acenaphthylene		
Cobalt	Aldrin	Anthracene		
Manganese	alpha-BHC	Benz(a)anthracene		
Mercury	alpha-Chlordane	Benzo(a)pyrene		
Selenium	beta-BHC	Benzo(b)fluoranthene		
Thallium	Dalapon	Benzo(g,h,i)perylene		
	delta-BHC	Benzo(k)fluoranthene		
	Dichlorprop	Bis(2-ethylhexyl)phthalate		
	Dieldrin	Butyl benzyl phthalate		
	Dinoseb	Carbazole		
	Endosulfan I	Chrysene		
	Endosulfan II	Dibenz(a,h)anthracene		
	Endosulfan sulfate	Fluoranthene		
	Endrin	Fluorene		
	Endrin aldehyde	Indeno(1,2,3-cd)pyrene		
	Endrin ketone	Naphthalene		
	gamma-BHC	Phenanthrene		
	gamma-Chlordane	Pyrene		
	Heptachlor			
	Heptachlor epoxide			
	MCPA			
	MCPP			
	Toxaphene			

Table 2
Surface Water and Sediment Sample Location Rationale
WRN AOI-1-7
US Oil Recovery Superfund Site
Pasadena, TX

Sampling Location	Sample Matrix	Location Objective/Rationale	COPC PSV Exceedances in Associated Soil Borings or Groundwater Samples[1]	Human Health/Ecological Receptors to be Evaluated
VBSD-1	Sediment	Adjacent to visible drainage feature that drains and is down-gradient of storm water sheet flow runoff from Northeast Slope Area, where elevated COPC concentrations/PSV exceedances were noted	Metals (3 exceedances) VOCs (No exceedances) SVOCs (No exceedances) Pesticides and Herbicides (10 exceedances) TPH (No exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSD-2	Sediment	Adjacent to visible drainage feature that drains and is down-gradient of storm water sheet flow runoff from Northeast Slope Area, where elevated COPC concentrations/PSV exceedances were noted	Metals (9 exceedances) VOCs (6 exceedances) SVOCs (1 exceedance) Pesticides and Herbicides (17 exceedances) TPH (2 exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSD-3	Sediment	Adjacent to SB-119 and is down-gradient of storm water sheet flow runoff from Northeast Slope Area, where elevated COPC concentrations/PSV exceedances were noted	Metals (5 exceedances) VOCs (4 exceedances) SVOCs (1 exceedance) Pesticides and Herbicides (11 exceedances) TPH (1 exceedance)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSD-4	Sediment	Adjacent to SB-95, where elevated COPC concentrations/PSV exceedances were noted	Metals (8 exceedances) VOCs (8 exceedances) SVOCs (2 exceedances) Pesticides and Herbicides (10 exceedances) TPH (2 exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSD-5	Sediment	Adjacent to SB-58, where elevated COPC concentrations/PSV exceedances were noted	Metals (5 exceedances) VOCs (3 exceedances) SVOCs (1 exceedance) Pesticides and Herbicides (12 exceedances) TPH (No exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSD-6	Sediment	Adjacent to SB-118B, where an elevated arsenic concentrations/PSV exeedance was noted	Metals (1 exceedance) VOCs (not analyzed) SVOCs (no exceedances) Pesticides and Herbicides (no exceedances) TPH (no exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user

Table 2
Surface Water and Sediment Sample Location Rationale
WRN AOI-1-7
US Oil Recovery Superfund Site
Pasadena, TX

Sampling Location	Sample Matrix	Location Objective/Rationale	COPC PSV Exceedances in Associated Soil Borings or Groundwater Samples[1]	Human Health/Ecological Receptors to be Evaluated
VBSW-1	Surface Water	Adjacent to visible drainage feature that drains and is down-gradient of storm water sheet flow runoff from Northeast Slope Area, where elevated COPC concentrations/PSV exceedances were noted	Metals (3 exceedances) VOCs (No exceedances) SVOCs (No exceedances) Pesticides and Herbicides (10 exceedances) TPH (No exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSW-2	Surface Water	Adjacent to visible drainage feature that drains and is down-gradient of storm water sheet flow runoff from Northeast Slope Area, where elevated COPC concentrations/PSV exceedances were noted	Metals (9 exceedances) VOCs (6 exceedances) SVOCs (1 exceedance) Pesticides and Herbicides (17 exceedances) TPH (2 exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSW-3	Surface Water	Adjacent to SB-119 and is down-gradient of storm water sheet flow runoff from Northeast Slope Area, where elevated COPC concentrations/PSV exceedances were noted	Metals (5 exceedances) VOCs (4 exceedances) SVOCs (1 exceedance) Pesticides and Herbicides (11 exceedances) TPH (1 exceedance)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSW-4	Surface Water	Adjacent to SB-95, where elevated COPC concentrations/PSV exceedances were noted	Metals (8 exceedances) VOCs (8 exceedances) SVOCs (2 exceedances) Pesticides and Herbicides (10 exceedances) TPH (2 exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSW-5	Surface Water	Adjacent to SB-58, where elevated COPC concentrations/PSV exceedances were noted	Metals (3 exceedances) VOCs (3 exceedances) SVOCs (1 exceedance) Pesticides and Herbicides (12 exceedances) TPH (No exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user
VBSW-6	Surface Water	Adjacent to SB-118B, where an elevated arsenic concentrations/PSV exeedance was noted	Metals (1 exceedance) VOCs (not analyzed) SVOCs (no exceedances) Pesticides and Herbicides (no exceedances) TPH (no exceedances)	Ecological: benthic invertebrates, fish community, mammals and birds Human Health: Off-property recreational user

1. Complete data for COPC PSV exceedances are listed on Table 3.

Exceedance totals are total number of compounds in that chemical group that exceeded the applicable PSV in soil samples collected from associated soil borings

VOCs- Volatile Organic Compounds

SVOCs - Semi-volatile Organic Compounds

TPH - Total Petroleum Hydrocarbons

Table 3
Soil and Groundwater Data Rationale for Surface Water and Sediment Sampling in Vince Bayou
WRN AOI-1-7
US Oil Recovery Superfund Site
Pasadena, TX

Proposed SW/Sed Location	Associated Soil Borings or Monitoring Wells	Sample Media and Soil Interval (ft bgs)	COPC Group	Analyte PSV Exceedances	PSV[1,2,5] (soil-mg/kg groundwater-mg/L)	Sample Concentration (soil-mg/kg groundwater-mg/L)	Hazard Quotient[4]
VBSD-1/VBSW-1	SB-55	0-0.5	Metals	Selenium	0.58	0.956	1.6
	Tidal	Surface Soil	VOCs	No Exceedances			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	alpha-BHC	0.0021	0.034	16
				beta-BHC	0.0026	0.0042	1.6
				delta-BHC	0.0014	0.0044	3.1
				gamma-BHC	0.0014	0.011	7.9
			TPH	No Exceedances			
		1.0-2.2	Metals	Arsenic	30.4	57.7	1.9
		Shallow Soil		Mercury	0.243	4.63	19
				Selenium	0.735	1.1	1.5
			VOCs	No Exceedances			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	4,4'-DDD	0.043	0.25	5.8
				4,4'-DDE	0.054	0.12	2.2
				4,4'-DDT	0.077	0.1	1.3
				Aldrin	0.002	0.067	34
				alpha-BHC	0.0021	0.017 J	8.1
				beta-BHC	0.0026	0.0093	3.6
				delta-BHC	0.0014	0.0066	4.7
				Dieldrin	0.0031	0.1 J	32
				gamma-BHC	0.0014	0.0064	4.6
				Heptachlor epoxide	0.000078	0.022 J	282
			TPH	No Exceedances			
	MW-16	Groundwater	Metals	No Exceedances			
	Tidal		Pesticides/Herbicides	alpha-BHC	0.000014	0.000068	4.9
			SVOCs	No Exceedances			
			VOCs	No Exceedances			
			TPH	No Exceedances			

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Proposed SW/Sed Location	Associated Soil Borings or Monitoring Wells	Sample Media and Soil Interval (ft bgs)	COPC Group	Analyte PSV Exceedances	PSV[1,2,5] (soil-mg/kg groundwater-mg/L)	Sample Concentration (soil-mg/kg groundwater-mg/L)	Hazard Quotient[4]
VBSD-2/VBSW-2	SB-109	0-0.5	Metals	Arsenic	8.43	68.9	8.2
		Surface Soil		Mercury	0.243	0.313	1.3
				Manganese	997	1120	1.1
				Selenium	0.679	1.93	2.8
				Chromium	30	30.3	1.0
			VOCs	No Exceedances			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	No Exceedances			
			TPH	No Exceedances			
		3.0-4.0	Metals	Arsenic	30.4	1640	54
		Shallow Soil		Mercury	0.243	88.7	365
				Antimony	1	4.62	4.6
				Barium	300	317	1.1
				Boron	30	81.8	2.7
				Cadmium	1	1.13	1.1
				Manganese	847	1400	1.7
				Selenium	1.04	3.1	3.0
			VOCs	1,2,4-Trichlorobenzene	0.0033	0.097	29
				1,2,4-Trimethylbenzene	0.021	0.031	1.5
				1,4-Dichlorobenzene	0.00046	0.73	1587
				Benzene	0.00023	0.16	696
				Chlorobenzene	0.053	3.6	68
				Ethylbenzene	0.0017	0.014	8.2
			SVOCs	Hexachlorobutadiene	0.0091	0.035	3.8
			Pesticides/Herbicides	4,4'-DDD	0.043	120 JH	2791
				4,4'-DDE	0.054	15 JH	278
				4,4'-DDT	0.077	140 JH	1818
				Aldrin	0.002	0.025 JH	13
				alpha-BHC	0.0021	0.12 JH	57
				alpha-Chlordane	0.29	3.2 JH	11
				beta-BHC	0.0026	0.58 JH	223
				delta-BHC	0.0014	0.091 JH	65
				Dieldrin	0.052	13 JH	250
				Endrin	0.081	1 JH	12
				Endrin aldehyde	0.081	0.25 JH	3.1
				Endrin ketone	0.081	0.91 JH	11
				gamma-BHC	0.0014	0.035 JH	25
				gamma-Chlordane	0.23	3.1 JH	13
				Heptachlor	0.013	0.077 JH	5.9
				Heptachlor epoxide	0.046	0.76 JH	17
				Toxaphene	0.0024	78 JH	32500
			TPH	C6-C12	0.017	15 J	882
				>C12-C28	1.5	210	140

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Proposed SW/Sed Location	Associated Soil Borings or Monitoring Wells	Sample Media and Soil Interval (ft bgs)	COPC Group	Analyte PSV Exceedances	PSV[1,2,3] (soil-mg/kg groundwater-mg/L)	Sample Concentration (soil-mg/kg groundwater-mg/L)	Hazard Quotient[4]
VBSD-3/VBSW-3	SB-119	0-0.5	Metals	Selenium	0.679	0.752	1.1
	Tidal	Surface Soil	VOCs	No Exceedances			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	Aldrin	0.002	0.0063	3.2
			TPH	No Exceedances			
		4.0-5.0	Metals	Mercury	0.243	2.92	12
		Shallow Soils		Silver	1	2.21	2.2
			VOCs	1,2-Dichlorobenzene	0.3	0.9	3.0
				1,4-Dichlorobenzene	0.00046	3.5	7609
				Benzene	0.00023	0.016	70
				Chlorobenzene	0.053	12	226
			SVOCs	No Exceedances			
			Pesticides/Herbicides	2,4-DB	0.085	0.28 JL	3.3
				4,4'-DDD	0.043	2.9	67
				4,4'-DDE	0.054	0.53	9.8
				4,4'-DDT	0.077	1.1	14
				Aldrin	0.002	40	20000
				alpha-BHC	0.0021	0.12	57
				beta-BHC	0.0026	0.046	18
				delta-BHC	0.0014	0.013	9.3
				Dieldrin	0.052	0.46 J	8.8
				gamma-BHC	0.0014	0.016	11
			TPH	>C12-C28	1.5	47J	31
		5.0-6.0	Metals	Arsenic	30.4	116	3.8
		Sub Surface Soils		Boron	30	38.1	1.3
				Mercury	0.243	0.534	2.2
				Selenium	1.04	1.13	1.1
			VOCs	1,4-Dichlorobenzene	0.00046	2	4348
				Chlorobenzene	0.053	8.4	158
			SVOCs	No Exceedances			
			Pesticides/Herbicides	4,4'-DDD	0.043	2.1	49
				4,4'-DDE	0.054	0.62	11
				4,4'-DDT	0.077	1.1	14
				Aldrin	0.002	0.42 J	210
				alpha-BHC	0.0021	0.0055 JH	2.6
				beta-BHC	0.0026	0.015 JH	5.8
				delta-BHC	0.0014	0.011 JH	7.9
				Dieldrin	0.052	0.31 J	6.0
				gamma-Chlordane	0.23	0.31	1.3
			TPH	No Exceedances			
	MW-15	Groundwater	Metals	No Exceedances			
	Tidal		Pesticides/Herbicides	Aldrin	0.0000054	0.00002	3.7
				alpha-BHC	0.000014	0.00073 J	52
				beta-BHC	0.000051	0.000074	1.5
				Dieldrin	0.0000057	0.000058	10
			VOCs	No Exceedances			
			SVOCs	1,4-dioxane	0.00091	0.0012	1.3
			TPH	No Exceedances			

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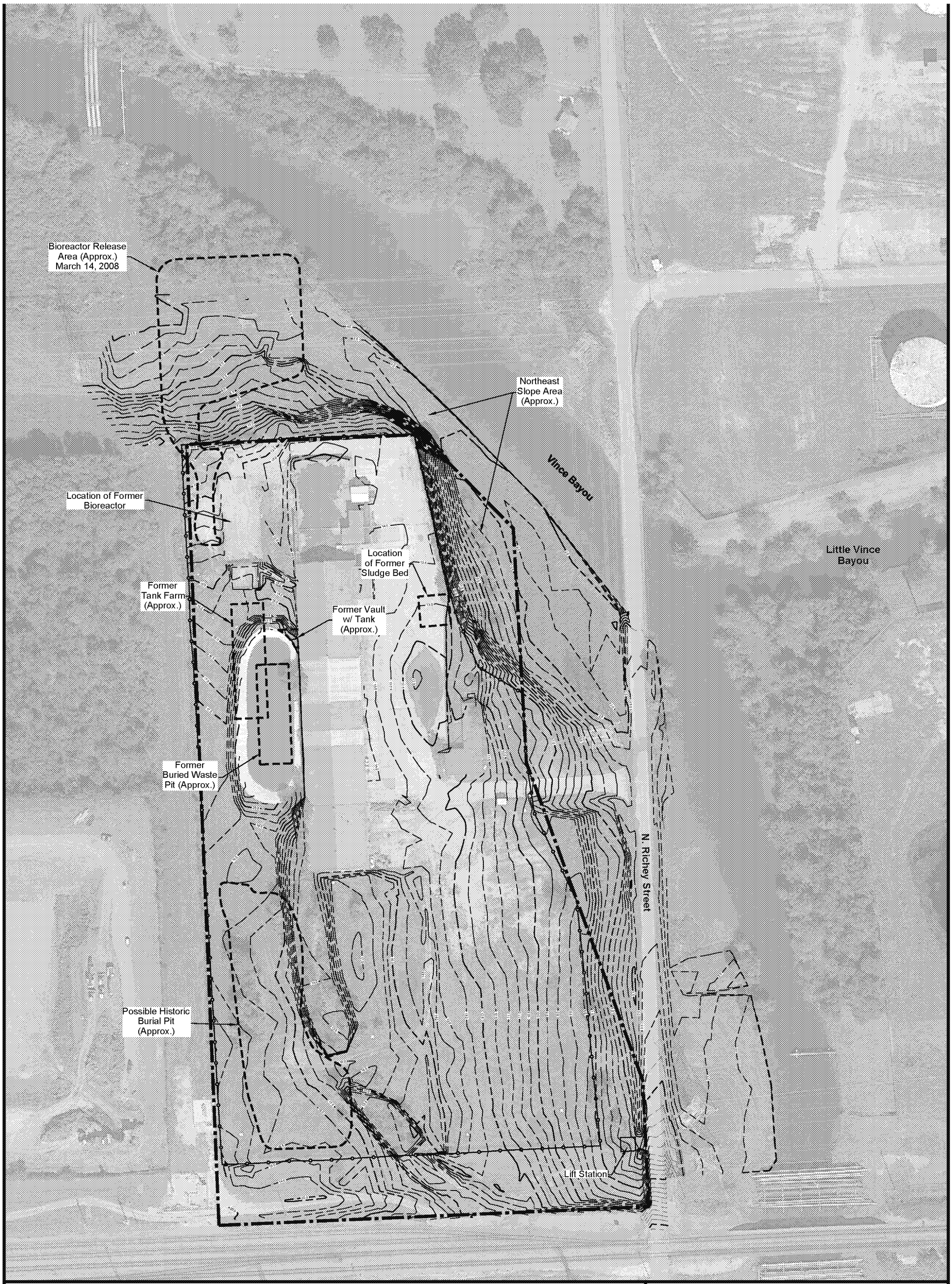
Proposed SW/Sed Location	Associated Soil Borings or Monitoring Wells	Sample Media and Soil Interval (ft bgs)	COPC Group	Analyte PSV Exceedances	PSV[1,2,3] (soil-mg/kg groundwater-mg/L)	Sample Concentration (soil-mg/kg groundwater-mg/L)	Hazard Quotient[4]
VBSD-4/VBSW-4	SB-95	0-0.5	Metals	Selenium	0.0679	1.02	15
		Surface Soil	VOCs	No Exceedances			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	4,4'-DDD	0.043	0.24	5.6
				4,4'-DDT	0.077	0.17	2.2
				Aldrin	0.002	0.0082	4.1
				alpha-BHC	0.0021	0.017	8.1
				gamma-BHC	0.0014	0.0019 J	1.4
				Toxaphene	0.0024	0.093 J	39
			TPH	No Exceedances			
		3.0-4.2	Metals	Antimony	1	5.79 J	5.8
		Shallow Soil		Arsenic	30.4	1940 J	64
				Boron	30	46.7	1.6
				Cadmium	1	1.17	1.2
				Mercury	0.243	7.04 J	29
				Selenium	1.04	4.27 J	4.1
				Silver	1	1.38 J	1.4
				Thallium	0.202	0.578 J	2.9
			VOCs	1,2,3-Trichlorobenzene	0.021	0.12 J	5.7
				1,2,4-Trichlorobenzene	0.0033	0.096 J	29
				1,2,4-Trimethylbenzene	0.021	1.2 J	57
				1,3,5-Trimethylbenzene	0.17	0.52 J	3.1
				1,4-Dichlorobenzene	0.00046	0.66	1435
				Benzene	0.00023	0.063 J	274
				Chlorobenzene	0.053	2.7	51
				Ethylbenzene	0.0017	0.63 J	371
			SVOCs	1,2,4,5-Tetrachlorobenzen	0.0079	0.027	3.4
			Pesticides/Herbicides	4,4'-DDD	0.043	18	419
				4,4'-DDE	0.054	1.5	28
				4,4'-DDT	0.077	15 J	195
				Aldrin	0.002	6.6 J	3300
				alpha-BHC	0.0021	0.019 J	9.0
				alpha-Chlordane	0.29	0.3 J	1.0
				beta-BHC	0.0026	0.023 J	8.8
				Dieldrin	0.052	1.9 J	36.5
				gamma-Chlordane	0.23	0.87	3.8
				Toxaphene	0.0024	0.21 J	87.5
			TPH	C6-C12	0.017	74	4353
				>C12-C28	1.5	370	247
	MW-9	Groundwater	Metals	Boron	4.9	25.9	5.3
	Tidal		VOCs	Chlorobenzene	0.1	0.39	3.9
			SVOCs	1,4-Dioxane	0.00091	0.02	22
			Pesticides/Herbicides	Aldrin	0.0000054	0.000021 J	3.9
				alpha-BHC	0.000014	0.00092 J	66
				beta-BHC	0.000051	0.00025 J	4.9
				delta-BHC	0.000051	0.00045	8.8
				Dieldrin	0.0000057	0.000062 J	11
				gamma-BHC	0.0002	0.00066 J	3.3
			TPH	No Exceedances			

Table 3
Soil and Groundwater Data Rationale for Surface Water and Sediment Sampling in Vince Bayou
WRN AOI-1-7
US Oil Recovery Superfund Site
Pasadena, TX

Proposed SW/Sed Location	Associated Soil Borings or Monitoring Wells	Sample Media and Soil Interval (ft bgs)	COPC Group	Analyte PSV Exceedances	PSV[1,2,3] (soil-mg/kg groundwater-mg/L)	Sample Concentration (soil-mg/kg groundwater-mg/L)	Hazard Quotient[4]
VBSD-5/VBSW-5	SB-58	0-0.5	Metals	Arsenic	8.43	10.4	1.2
		Surface Soil		Selenium	0.0679	0.944	14
			VOCs	No Exceedances			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	4,4'-DDD	0.043	1.4 JL	33
				4,4'-DDE	0.054	0.25 JL	4.6
				4,4'-DDT	0.077	2.1 JL	27
				Aldrin	0.002	0.11 JL	55
				alpha-BHC	0.0021	0.0052 JL	2.5
				beta-BHC	0.0026	0.0032 JL	1.2
				Dieldrin	0.052	0.065 JL	1.3
				Toxaphene	0.0024	0.046 JL	19
			TPH	No Exceedances			
		1.0-1.6	Metals	Antimony	1	1.51	1.5
		Shallow Soil		Arsenic	30.4	643	21
				Mercury	0.243	1.12	4.6
				Selenium	1.04	2.19	2.1
				Thallium	0.202	0.25	1.2
			VOCs	1,2,4-Trichlorobenzene	0.0033	0.0049 J	1.5
				1,4-Dichlorobenzene	0.00046	0.02	43
				Chlorobenzene	0.053	0.082	1.5
			SVOCs	Bis(2-ethylhexyl)phthalate	1.3	3.2	2.5
			Pesticides/Herbicides	2,4-DB	0.085	0.87	10
				4,4'-DDD	0.043	0.17	4.0
				4,4'-DDT	0.077	0.16	2.1
				Aldrin	0.002	0.014	7.0
				alpha-BHC	0.0021	0.19	90
				beta-BHC	0.0026	0.025	9.6
				delta-BHC	0.0014	0.0079	5.6
				Dichlorprop	0.23	0.4 J	1.7
				gamma-BHC	0.0014	0.015	11
			TPH	No Exceedances			
VBSD-6/VBSW-6	SB-118B	4.0-5.0	Metals	Arsenic	30.4	102	3.4
		Shallow Soil	VOCs	Not analyzed			
			SVOCs	No Exceedances			
			Pesticides/Herbicides	No Exceedances			
			TPH	No Exceedances			

1. Preliminary Screening Values for soil are derived by taking the lowest applicable value from the following. Next, the higher of that value and the representative soil background value is defined as the PSV.
   (1) TRRP Tier I Residential Protective Concentration Level (PCL), 30-acre Source Area (30 TAC 350.51 (m)); Texas Risk Reduction Program, April 2018, Screening levels for carcinogens adjusted to 10-6 risk;
   (2) Regional Screening Levels, lower of Risk-Based or MCL-Based SSL http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, June 2017; and
   (3) Soil Benchmarks. August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html (surface soil only); and
   (4) EPA Region V Mammals or Plants, USEPA, 2003 (surface soil only).
2. The representative soil background value is the higher of the following:
   (1) Texas-Specific Soil Background Concentrations, 30 TAC 350.51(m); and
   (2) Background UTLs from "Site-Specific Background Soil Concentration Calculations" memo.
3. Preliminary Screening Values for groundwater represent lowest values from:
   (1) Maximum Contaminant Level (MCL), http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, June 2017; or, if there is not a MCL;
   (2) Protective Concentration Level; Texas Risk Reduction Program, April 2018. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. Screening levels for carcinogens adjusted to 10-6 risk.
4. The Hazard Quotient (HQ) is the ratio of the sample concentration to the PSV.

FIGURES



EXPLANATION

Approx. Property Boundary

N

Scale in Feet

0 65 130

Source:
Imagery taken from Google Earth, photography dated October 28, 2017.
Base map from Martin Olson Survey Inc., Boundary Survey dated July 2013, revised November 2016.

US OIL RECOVERY SUPERFUND SITE

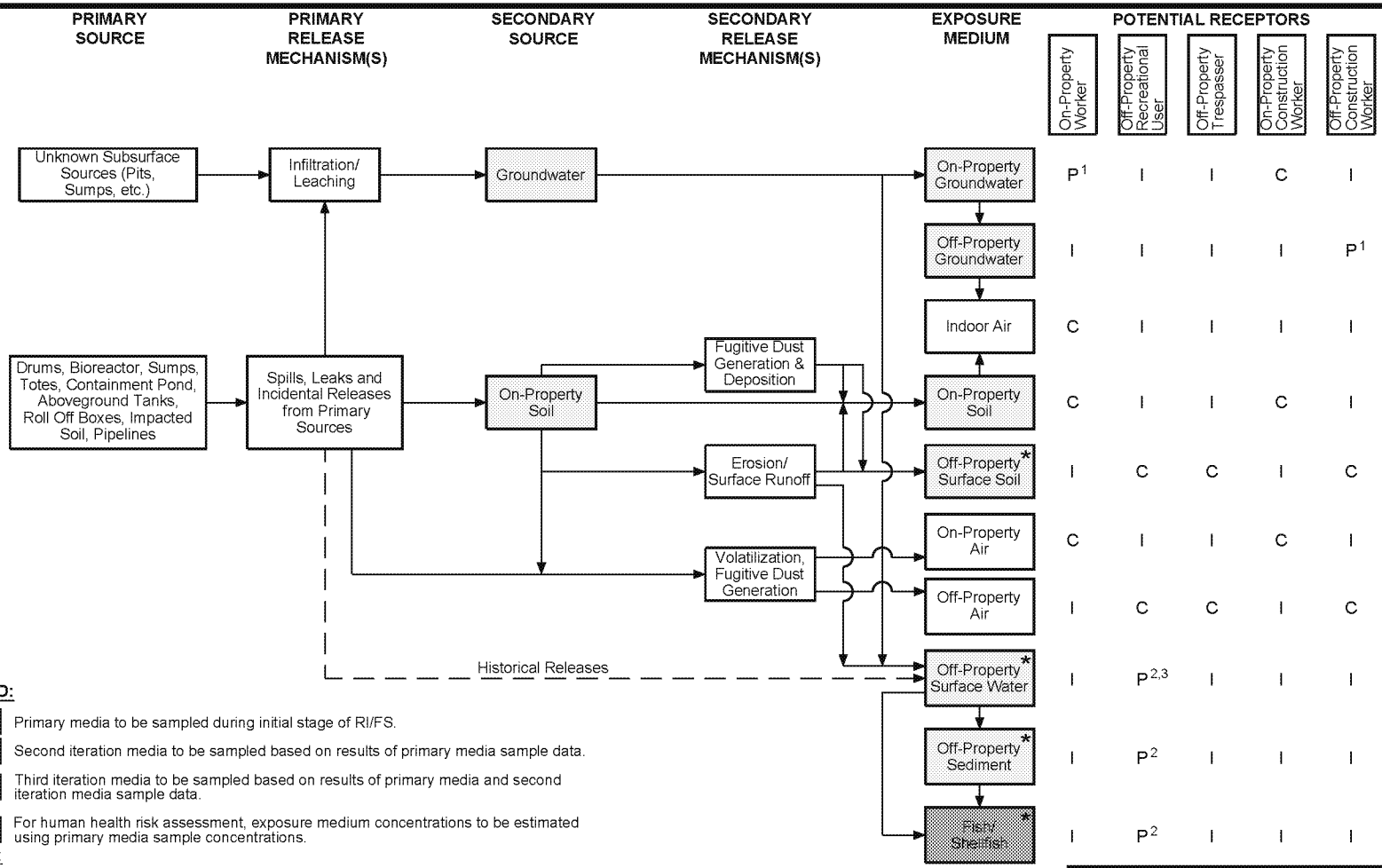
PASADENA, HARRIS COUNTY, TEXAS

Figure 1

TOPOGRAPHIC MAP

PROJECT: 3333	BY: AJD	REVISIONS
DATE: MAR., 2018	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



LEGEND:

- Primary media to be sampled during initial stage of RI/FS.
- Second iteration media to be sampled based on results of primary media sample data.
- Third iteration media to be sampled based on results of primary media and second iteration media sample data.
- For human health risk assessment, exposure medium concentrations to be estimated using primary media sample concentrations.

Notes:

C Pathway is potentially complete.

P Pathway is possibly complete.

I Pathway is incomplete.

1 It is unlikely that shallow groundwater in this area is useable given the salinity. However, data will be collected to characterize the salinity of all relevant groundwater bearing units. A survey of the on- and off-property area for the presence of water wells will also be performed as part of the groundwater investigation. Potential impacts will be investigated to ensure that these pathways are incomplete for off-property groundwater and/or deeper groundwater units, if appropriate.

2 Potential exposures and associated chemicals of concern for these receptors will be evaluated through an iterative process in consideration of primary source data and data for transport media collected during the RI/FS.

3 Surface water is not a potable or agricultural resource due to high natural salinity and bacterial levels in the area.

* Background sampling of these media may be performed in conjunction with the evaluation of this pathway.

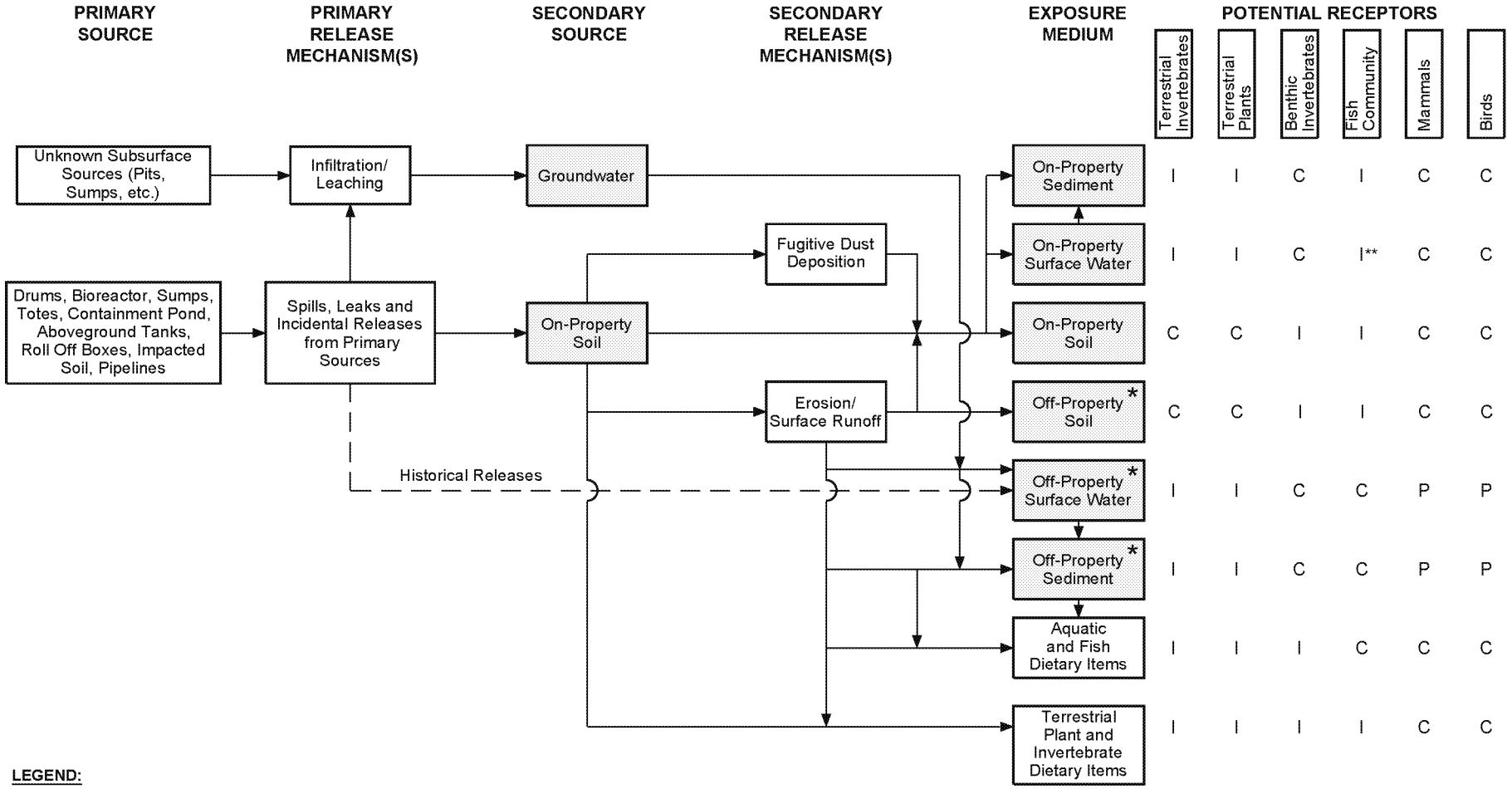
US OIL RECOVERY SUPERFUND SITE
PASADENA, HARRIS COUNTY, TEXAS

Figure 2

HUMAN HEALTH CONCEPTUAL SITE MODEL USOR PROPERTY

PROJECT: 3333-7	BY: AJD	REVISIONS
DATE: MAR., 2018	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



LEGEND:

Primary media sampled during initial stage of RI/FS.

Second iteration media to be sampled based on results of primary media sample data.

For screening level ecological risk assessment, exposure medium concentrations to be estimated using primary media sample concentrations.

Notes:

C Pathway is potentially complete.

I Pathway is incomplete.

P Potential exposures for COPCs will be evaluated in an iterative manner based on sample results from primary media.

* Background sampling of these media may be performed in conjunction with the evaluation of this pathway.

** Fish have not been observed. Unlikely that drainage would support fish population.

US OIL RECOVERY SUPERFUND SITE

PASADENA, HARRIS COUNTY, TEXAS

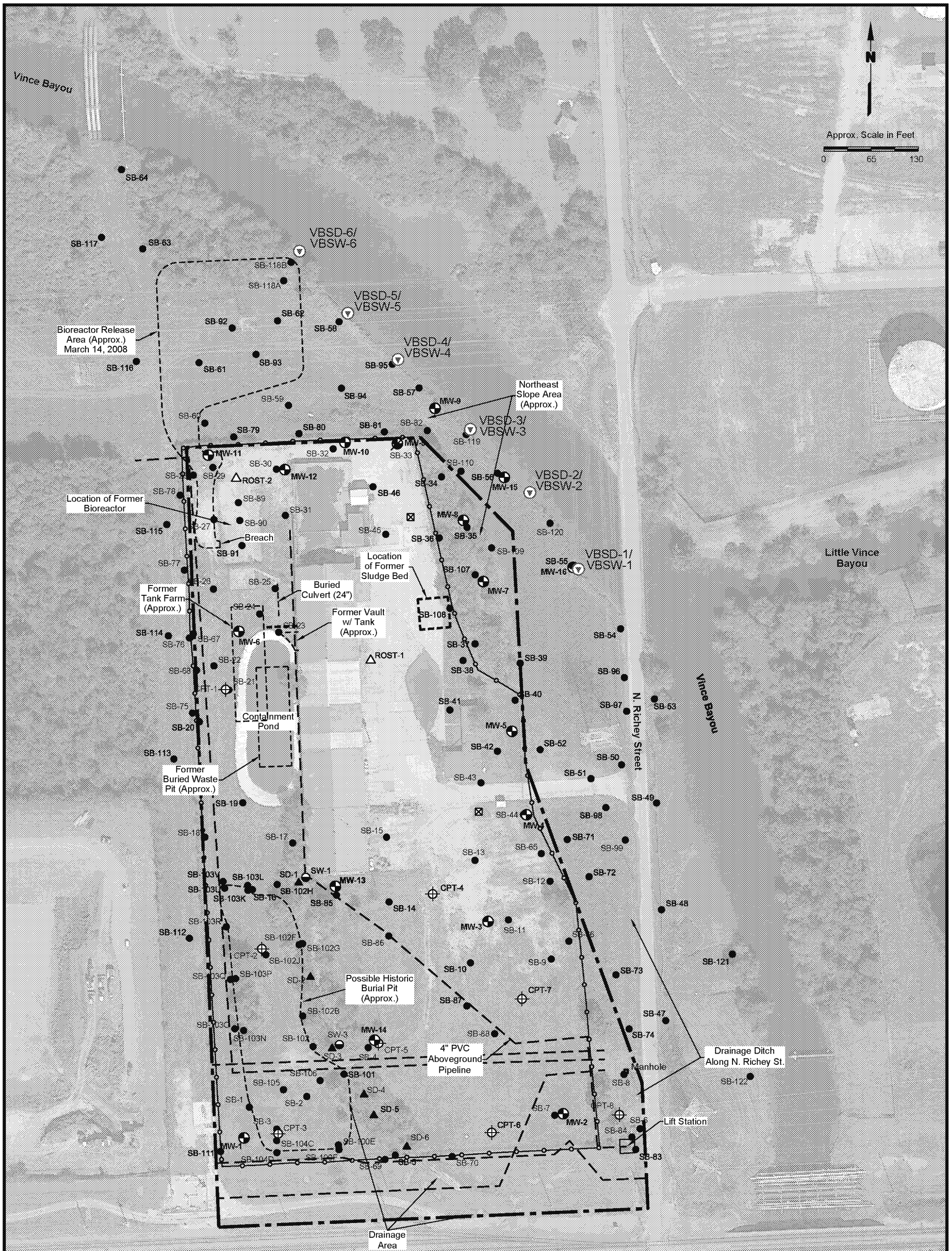
Figure 3

ECOLOGICAL CONCEPTUAL SITE MODEL USOR PROPERTY

PROJECT: 3333-2	BY: AJD	REVISIONS
DATE: MAR., 2018	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS



Source:
Imagery taken from Google Earth, photography dated October 28, 2017.

EXPLANATION

- Approx. Property Boundary
- Approx. Security Fence
- Approx. Pipeline Location
- Monitoring Well Location
- Soil Boring Location per RI/FS Work Plan or Applicable Work Plan Refinement Notice
- On-Property Surface Water Sample Location
- On-Property Sediment Sample Location
- CPT Location
- CPT/ROST Location
- Proposed Vince Bayou Surface Water/Sediment Sample Location

US OIL RECOVERY SUPERFUND SITE

PASADENA, HARRIS COUNTY, TEXAS

Figure 4

PROPOSED SURFACE WATER AND SEDIMENT SAMPLE LOCATION MAP

PROJECT: 3333	BY: AJD	REVISIONS
DATE: MAY, 2018	CHECKED: MKW	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS

ATTACHMENT A
COPC LIST IDENTIFICATION REPORT FOR ITERATION 2

COPC LIST IDENTIFICATION PROCESS FOR ITERATION 2

US OIL RECOVERY SUPERFUND SITE

Introduction

The Remedial Investigation/Feasibility Study (RI/FS) Work Plan for Area of Investigation (AOI)-1 at the US Oil Recovery Superfund Site (USOR) in Pasadena, TX (the Site) describes the process for identifying the list of chemicals of potential concern (COPC) between RI/FS iterations by focusing on only those COPCs that originated at the USOR property (PBW, 2015a). Specifically, page 33 of the Work Plan states,

> "In the first iteration of data collection (Iteration 1), samples will be collected from 1) on-property soil, groundwater, surface water, and sediment, and 2) off-property soil and groundwater. All samples will be analyzed for the initial list of COPCs. The results of the evaluation of the first iteration data (i.e., comparison to screening levels) will then be used to develop an investigative strategy for off-property sediment and surface water (Iteration 2) based on those COPCs that were determined to have originated at the USOR Property. Iteration 2 will include sampling of surface water and sediment in Vince Bayou and possibly Little Vince Bayou, as appropriate, with sample locations/collection details and analyte list developed based on data from the previous investigation iteration."

In addition, Section 2.4.1.5 of the RI/FS Quality Assurance Project Plan (QAPP) (PBW, 2015b) states "*If* the concentration of a COPC in a media at the perimeter of the property or at an off-property sampling location exceeds the extent evaluation PSV, *then* collect additional samples for delineation."

As such, this memo describes the process for identifying the COPC list for Iteration 2 of the RI/FS (off-property surface water and sediment in Vince Bayou) after the completion of RI/FS Iteration 1 (on- and off-property soil and groundwater sampling and on-property surface water and sediment sampling).

Pastor, Behling & Wheeler, LLC (PBW) evaluated the existing Iteration 1 data set, which currently includes analytical data for 324 on- and off-property soil samples, 16 groundwater samples, 6 on-property sediment samples, and 2 on-property surface water samples. The COPCs analyzed in these samples included metals, pesticides and herbicides, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH). In all, the analyses account for 174 different compounds, three fractions of TPH plus total TPH, with over 59,000 data points for the various analytes and media, not including quality assurance samples.

COPC Identification Process for Iteration 2 Sampling

The Preliminary Screening Values (PSVs) were risk-based values used for comparison to Site data and were identified in the RI/FS Work Plan (PBW, 2015a) and associated QAPP (PBW, 2015b) as the appropriate screening criteria for nature and extent evaluation purposes. Since RI/FS Work Plan approval, the PSVs have been updated to reflect changes the U.S. Environmental Protection Agency (EPA) or Texas Commission on Environmental Quality (TCEQ) have made to their risk-based values. For the purposes of identifying COPCs for analysis in Iteration 2 sampling, the lowest of the residential human health screening values for direct contact pathways or ecological risk screening values was used for comparison to Site data. If the representative background soil concentration (as determined in the Site-Specific Background Soil Concentration Calculations (PBW, 2017) and approved by EPA on

December 21, 2017) for a given compound is above the lowest PSV, the soil representative background soil concentration was used for comparison as described in Section 2.4.1.5 of the QAPP (PBW, 2015b).

To develop the list of analytes for Iteration 2 sediment and surface water samples, the on- and off-property soil, and on- and off-property groundwater data were evaluated using a multi-step approach, as described below. On-property surface water and sediment sample data were evaluated also, but the compounds detected in these media were essentially the same as those compounds detected in on-property soil and groundwater samples. As such, those media were considered in the process after the soil and groundwater data were evaluated to ensure that a compound detected in on-property surface water and sediment was not inadvertently overlooked.

This memorandum documents the process and evaluation for systematically reviewing the analytical data from Iteration 1 sampling and developing the COPC list for Iteration 2 in order to focus the Iteration 2 COPC list on those compounds that potentially originated at the site as specified in the RI/FS Work Plan (PBW, 2015a). Figure 1 illustrates the process that is described in this memo, and is color coded to identify the various steps of the process and coincides with color coding used in the Attachment 1 table and Table 2.

Attachment 1 indicates whether a compound was detected, and if so, the detection frequency (in percentage of total analytical results for that compound), the maximum concentration detected, the PSV, and other information. Table 2 summarizes the results of this process for each COPC. Attachment 1 is color coded to match the color coding in Figure 1 and Table 2 and shows which step (if any) resulted in the COPC's elimination from the Iteration 2 COPC list.

Data Quality Overview

The QAPP (PBW, 2015b) and the RI/FS Work Plan (PBW, 2015a) were designed to ensure that the data collected during the RI are appropriate for nature and extent delineation and quantitative risk assessment. Data validation was performed following the procedures set forth in the Work Plan (PBW, 2015a) and QAPP (PBW, 2015b). Overall, the data collected met data quality indicators and are of acceptable quality. The following discussion identifies the compounds where detection limits for at least one sample were above the PSVs.

Very few of the sample quantitation limits (SQLs) for soil samples were above the human health or ecological PSVs. Total silver was not detected in groundwater above the SQL in any of the 16 groundwater samples. The SQL (maximum SQL of 0.0002 mg/L) in groundwater is essentially the same as the ecological PSV (0.00019 mg/L) for silver. These groundwater data represent total water concentrations. Additional groundwater sampling that included dissolved silver analysis (since the silver ecological PSV is based on a dissolved surface water concentration) showed no measured concentrations above the detection SQL of 0.0002 mg/L at MW-9, MW-15 and MW-16, which are the wells closest to Vince Bayou. It should be noted that detected concentrations below the SQL (or J flag data) would identify the presence of the compound, even if the concentration was estimated, at levels below or equal to the PSV. As noted below, silver was eliminated from further consideration in Step 2 since it was not detected above a PSV in soil or groundwater (nor were dissolved concentrations measured above a PSV in a perimeter groundwater sample).

Three SVOCs (4-bromophenyl phenyl ether, 4-chlorophenyl phenyl ether, and N-nitrosodi-n-propylamine), and two VOCs (1,2,2,2-tetrachloroethane, and 1,2-dibromoethane) were not detected above the SQL in any soil or groundwater sample but the groundwater SQL for these compounds were above their respective human health PSVs (although the SQLs were below the ecological PSV). These compounds were eliminated from further consideration in Step 1, as described below, since they were not

detected in any media. This will be discussed qualitatively in the uncertainty section of the human health risk assessment.

Step 1. Eliminate COPC if the COPC was not detected above the sample quantitation limit in any soil or groundwater sample.

Table 1 summarizes the compounds that were not detected in a soil or groundwater sample above the SQL. Compounds that were not detected in a soil or groundwater samples above the SQL are noted in green highlight in Attachment 1 and Table 2. A summary of the results of Step 1 for each major COPC group is as follows:

Metals – All metals were detected above their respective SQL in at least one groundwater or soil sample, and many of the metals were detected in every groundwater and soil sample. Therefore, all metals were evaluated further in Steps 2 through 5 below.

Pesticides and Herbicides – All pesticides and herbicides were detected above a SQL in at least one soil or groundwater sample. Therefore, all pesticides and herbicides were evaluated further in Steps 2 through 5 below.

Semi-Volatile Organic Compounds – The following SVOCs were not detected above their respective SQL in any soil or groundwater sample: 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-chloronaphthalene, 2-nitroaniline, 2-nitrophenol, 3-nitroaniline, 4-bromophenyl phenyl ether, 4-chlorophenyl phenyl ether, 4-nitroaniline, atrazine, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether, hexachloroethane, nitrobenzene and n-nitrosodi-n-propylamine. These compounds, highlighted in green in Attachment 1 and Table 2, were eliminated from further consideration in this memo and were eliminated from the COPC list for Iteration 2. All other SVOCs were evaluated further in Steps 2 through 5 below.

Volatile Organic Compounds – Twenty-six of the 55 VOCs were not detected in any soil or groundwater sample above the SQL (Table 1). These compounds, highlighted in green in Attachment 1 and Table 2, were eliminated from further consideration in this memo and were eliminated from the COPC list for Iteration 2. The remaining 29 VOCs that were detected above the SQL in one or more soil or groundwater sample were evaluated further in Steps 2 through 5 below.

Total Petroleum Hydrocarbons – The three fractions of TPH (as identified by TX Method 1005) as well as total TPH were detected above the SQL in at least one soil or groundwater sample and were retained for further evaluation in Steps 2 through 5 below.

Step 2. Eliminate COPC if COPC was not detected in a soil or groundwater sample at a concentration greater than the PSV in any media.

Attachment 1 provides a summary of all data for the COPCs analyzed in soil or groundwater samples at the site and indicates if a PSV was exceeded, as noted with yellow highlighting, and/or if the lowest PSV is less than the SQL. As previously discussed, PSVs were generally lower than the SQLs and all compounds had either an ecological-based PSV or human health-based PSV for soil and groundwater.

Metals – The metal COPCs that were eliminated during Step 2 are beryllium, cadmium, and silver. These metals were not detected at a concentration above a PSV in any soil or groundwater sample (as shown in Attachment 1 and Table 2 with yellow highlighting). The remaining 16 metal COPCs were evaluated further in Steps 3 through 5 below.

Pesticides and Herbicides – The pesticides and herbicides that were eliminated during Step 2 of this process are 2,4,5-T and 2,4,5-TP (Silvex), as shown in Attachment 1 and Table 2 with yellow highlighting. These compounds were detected infrequently in soil (3.97% and 2.65%, respectively) and no concentration in soil or groundwater exceeded the PSVs. The remaining 29 pesticides and herbicides were evaluated further in Steps 3 through 5 below.

Semi-Volatile Organic Compounds – Twenty-nine SVOCs were eliminated from the Iteration 2 COPC list since they were not measured at a concentration that exceeded the lowest PSV (as shown in yellow highlighting on Attachment 1 and Table 2). Five SVOCs (1,4-Dioxane, bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, carbazole, and dibenzofuran) were measured at a maximum concentration in either soil or groundwater that exceeded the PSV. Therefore, these compounds were evaluated further in the subsequent data evaluation steps 3 through 5. Because polynuclear aromatic hydrocarbons (PAHs, a subset of SVOCs) are summed based on whether they are high- or low-molecular weight compounds for comparison to ecological PSVs (since there are not individual ecological PSVs for individual PAHs) and are evaluated as high- or low-molecular weight classes in the ecological risk assessment, all PAHs were retained for further evaluation. Additionally, several individual PAHs were measured at concentrations in soil or groundwater that exceeded the human health PSV.

Volatile Organic Compounds – Twenty-one VOCs were not detected in a soil or groundwater sample above a PSV and, therefore, these COPCs were eliminated from the Iteration 2 COPC list, as noted with yellow highlighting in Attachment 1 and Table 2. Eight of the VOCs not eliminated in Step 1 were detected in at least one soil or groundwater sample at a concentration greater than the PSV. These compounds were retained for further evaluation in the subsequent steps 3 through 5 and include: 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,2-dichloroethane, 1,4-dichlorobenzene, benzene, chlorobenzene, ethylbenzene, and total xylenes.

Petroleum Hydrocarbons – The >C28-C35 fraction of TPH was not detected in any media sample above its PSV, nor was it detected above the sample quantitation limit in on-property surface water, on-property sediment, or groundwater sample. Therefore, following the described process for identifying Iteration 2 COPCs, the >C28-C35 fraction of TPH could be eliminated from the Iteration 2 COPC list but was retained since it is a component of total TPH.

Step 3. Eliminate COPC if the maximum measured soil concentration does not exceed the representative soil background concentration developed from the background study for metals, pesticides and herbicides, and select SVOCs.

If on- and off-property soil sample concentrations for metals, pesticides and herbicides, and SVOCs were less than or equal to the representative background soil concentrations and they are not measured above a PSV in groundwater, these compounds were eliminated from the Iteration 2 COPC list. A summary of the results of Step 3 is provided in the following paragraphs. If a compound had been eliminated from the Iteration 2 COPC list based on this step, it would have been highlighted in purple on Attachment 1 and Table 2. However, this step did not eliminate any compounds from the Iteration 2 COPC list.

Metals – None of the retained metals were eliminated based on Step 3 of this evaluation because the maximum detected concentration in on-property soil samples was above the representative background soil concentration for each metal.

Pesticides and Herbicides – None of the retained pesticides or herbicides were eliminated based on Step 3 of this evaluation because the maximum detected concentration in on-property soil samples was above the representative soil background concentration for each compound.

Semi-Volatile Organic Compounds – None of the retained SVOCs with representative background concentrations (PAHs, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, carbazole, and dibenzofuran) were eliminated based on Step 3 of this evaluation because the maximum detected concentration in on- and/or off-property soil samples was above the representative background soil concentration for each compound.

Volatile Organic Compounds – Background soil samples were not analyzed for VOCs.

Petroleum Hydrocarbons – Background soil samples were not analyzed for TPH.

Step 4. Eliminate COPC if the maximum detected concentration was less than two times greater than the PSV for that COPC considering all samples.

Given the large number of soil samples collected at the Site (324 samples), it is likely that the 95th percent upper confidence limit (UCL) for a COPC will be much lower than its corresponding lowest PSV when: 1) the maximum measured concentration on exceeds the PSV by a nominal amount; and 2) few samples exceed the PSV. Therefore, adding another step in the process by comparing a value of two times the lowest PSV to the sample concentrations is appropriate. A summary of the results of Step 4 is provided in the following paragraphs, and COPCs eliminated based on this step are highlighted in pink in Figure 1 as well as Attachment 1 and Table 2.

Metals – Aluminum, lead, nickel, vanadium and zinc were eliminated in Step 4, as shown in pink highlighting in Attachment 1 and Table 2, because none of these metals were measured in soil or groundwater at a concentration greater than two times the lowest PSV. The calculated 95 percent upper confidence limits (95% UCLs) for these metals in soil were 14,339 mg/kg for aluminum, 31.76 mg/kg for lead, 16.79 mg/kg for nickel, 34.05 mg/kg for vanadium, and 81.16 mg/kg for zinc, and all of these UCLs are below their corresponding human health and ecological PSVs. Furthermore, the samples containing concentrations of COPCs greater than their respective PSV (but less than two times the PSV) are generally located in the interior of the site. The remaining 11 metal COPCs were retained for further evaluation in Step 5, as shown in Table 2.

Pesticides and Herbicides – None of the pesticides or herbicides were eliminated based on Step 4 since all compounds were detected at a maximum concentration that was greater than two times the lowest PSV.

Semi-Volatile Organic Compounds – Several individual PAHs met the screening criteria in Step 4. However, because of the manner in which ecological risks associated with PAHs are estimated using a total low and high molecular weight PAH measurement, all PAHs were retained for the Iteration 2 COPC list. No SVOC was eliminated from further evaluation based on Step 4.

Volatile Organic Compounds – The maximum concentrations of 1,2,4-trichlorobenzene and 1,2-dichlorobenzene were less than two times the PSV in groundwater and, therefore, were eliminated from further evaluation, as shown in pink highlighting in Attachment 1 and Table 2. The PSV exceedances were based on the ecological surface water standard in groundwater and none of the exceedances were concentrations from samples from a perimeter monitoring well. Neither compound was detected at a soil concentration above the soil PSV. Six VOCs (1,2-dichloroethane, 1,4-dichlorobenzene, benzene, chlorobenzene, ethylbenzene, and total xylenes) were retained for further evaluation since these compounds were detected in at least one soil or groundwater sample at a concentration greater than two times the PSV.

Petroleum Hydrocarbons – TPH ranges C6-C12, >C12-C28 and total TPH were retained during Step 4 because they were detected at a maximum concentration that was greater than two times the PSV in at least one sample. The >C28-C35 fraction of TPH could be eliminated from the Iteration 2 COPC list based on this Step but was retained since it is a component of total TPH.

Step 5. Evaluate the spatial extent of COPC concentrations of remaining compounds and eliminate COPCs whose perimeter samples were non-detect and below PSVs.

Soil data was plotted spatially for the various depth intervals for all COPCs that were retained as COPCs through Step 4, as provided in Attachment 2. These data were evaluated to determine whether soil concentrations in perimeter samples were above or below PSVs. Likewise, for those COPCs where groundwater concentrations exceeded PSVs, data from perimeter wells (MW-9, MW-15, and MW-16) were evaluated to ensure that groundwater impacts were at the interior of the Site and measured groundwater concentrations near Vince Bayou were below PSVs. Compounds were eliminated from the Iteration 2 COPC list, as shown in Attachment 1, Table 2, and Figure 1 in orange highlighting, if their measured concentrations in perimeter soil and groundwater sample locations were below PSVs. For the compounds below, sample-by-sample hazard quotients were calculated on Table 4 for those borings that contained at least one sample whose concentrations exceeded two times the PSV. Those calculated hazard quotients are shown on the applicable figures in Attachment 2. Hazard quotients are the ratio of the detected concentration to the PSV and show the magnitude of a PSV exceedance. Hazard quotients are typically presented during the risk assessment phase of the investigation; the presentation of hazard quotients on Table 4 is simply a ratio of the soil concentration to PSV to assist with site characterization and does not constitute a risk assessment.

Metals – Copper, as shown, in Figure 1 of Attachment 2, was not measured at concentrations in perimeter soil or groundwater samples that exceeded PSVs and, as such, was eliminated from the Iteration 2 COPC list, as shown in orange highlighting in Attachment 1 and Table 2. Antimony, arsenic, barium, boron, chromium, cobalt, manganese, mercury, and selenium were retained on the Iteration 2 COPC list since they were measured in at least one perimeter soil or groundwater sample above their PSV. Thallium was also retained since there were exceedances greater than two times the PSV in two borings that were upgradient of the bayou on the northeast slope.

Pesticides and Herbicides – Dicamba and methoxychlor, as shown, respectively, in Figures 2 and 3 of Attachment 2, were not measured at concentrations in perimeter soil or groundwater samples that exceeded their PSVs. Therefore, these compounds were eliminated from the Iteration 2 COPC list, as shown in orange highlighting in Attachment 1 and Table 2, based on Step 5. The remaining 27 pesticide/herbicides COPCs were retained on the Iteration 2 COPC list since they were measured in at least one perimeter soil or groundwater sample above their PSV.

Semi-Volatile Organic Compounds – Dibenzofuran was not measured at concentrations in perimeter soil or groundwater samples that exceeded PSVs as shown in Figure 4 of Attachment 2. As such, it was eliminated from the Iteration 2 COPC list, as shown in orange highlighting in Attachment 1and Table 2. The remaining 22 SVOCs were retained on the Iteration 2 COPC list.

Volatile Organic Compounds – 1,2-Dichloroethane, ethylbenzene, and total xylenes were not measured at concentrations in perimeter soil or groundwater samples that exceeded PSVs, as shown in Figures 5, 6, and 7, respectively, in Attachment 2 (1,2-dichloroethane was not measured in soil above a PSV, but it was measured in two interior groundwater samples above the human health groundwater PSV). As such, they were eliminated from the Iteration 2 COPC list, as shown in orange highlighting in Attachment 1 and Table 2. 1,4-Dichlorobenzene, benzene, and chlorobenzene were retained on the Iteration 2 COPC list since they were measured in at least one perimeter soil or groundwater sample above their PSV.

Petroleum Hydrocarbons – TPH ranges C6-C12, >C12-C28 and total TPH were retained during Step 4 because they were detected at a maximum concentration that was greater than two times the PSV in at least one sample. The >C28-C35 fraction of TPH could be eliminated from the Iteration 2 COPC list based on this Step but was retained since it is a component of total TPH.

Conclusions

Table 2 summarizes the results of all steps of the Iteration 2 COPC list identification process. Table 3 is a summary list of COPCs retained for analysis in Iteration 2 surface water and sediment samples to be collected in Vince Bayou (and possibly in any background surface water and sediment samples, if such sampling is deemed necessary). These compounds are also noted in Attachment 1 and Table 2 with blue highlighting.

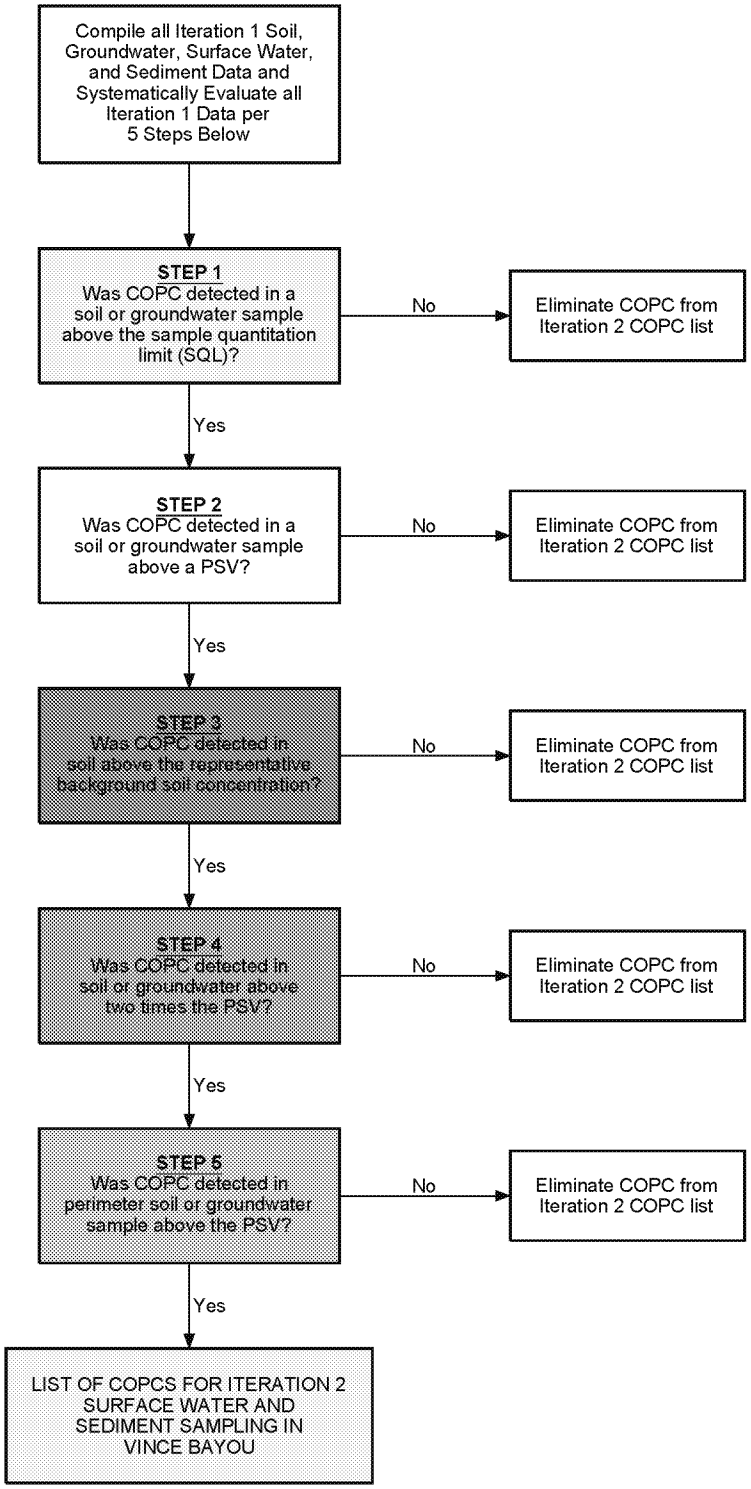
References:

Pastor, Behling & Wheeler (PBW), 2017. Site-Specific Background Soil Concentration Calculations for the US Oil Recover Superfund Site. November 9.

Pastor, Behling & Wheeler (PBW), 2015a. Remedial Investigation and Feasibility Study (RI/FS) Work Plan for the US Oil Recover Superfund Site. December 23.

Pastor, Behling & Wheeler (PBW), 2015b. Sampling and Analysis Plan Volume II, Quality Assurance Project Plan (QAPP) for the US Oil Recover Superfund Site. December 23.

Figure



Notes:
COPC - Chemical of Potential Concern

US OIL RECOVERY SUPERFUND SITE
PASADENA, HARRIS COUNTY, TEXAS

Figure 1

PROCESS FOR ITERATION 2 COPC IDENTIFICATION

PROJECT: 3333-7-HHRA	BY: AJD	REVISIONS
DATE: APR., 2018	CHECKED: KHT	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Tables

TABLE 1. COPCs Eliminated at Step 1 Because They Were Not Detected in a Soil or Groundwater Sample

SEMI-VOLATILE ORGANIC COMPOUNDS
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Nitroaniline
2-Nitrophenol
3-Nitroaniline
4-Bromophenyl phenyl ether
4-Chlorophenyl phenyl ether
4-Nitroaniline
Atrazine
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Hexachloroethane
Nitrobenzene
N-Nitrosodi-n-propylamine
VOLATILE ORGANIC COMPOUNDS
1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichlor-1,2,2-trifluoroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dibromoethane
1,2-Dichloropropane
2-Hexanone
4-Methyl-2-pentanone
Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chloroethane
Chloromethane
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Dibromochloromethane
Dichlorodifluoromethane
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Notes:

1. No metals, pesticides/herbicides, or petroleum hydrocarbons were eliminated during this step because the compounds were detected in at least one soil or groundwater sample.

TABLE 2. Summary of Results for COPC Identification

COPC	Eliminated Because Not Detected in a Soil or Groundwater Sample Above Sample Quantitation Limit (STEP 1)	Eliminated Because Maximum Soil or Groundwater Concentration < PSV (STEP 2)	Eliminated Because Detected Concentration < Representative Background Soil Concentration (STEP 3)	Eliminated Because Maximum Concentration Less than 2X PSV (STEP 4)	Eliminated Because Detected Concentrations in Perimeter Soil and Groundwater Samples were < PSV (STEP 5)	COPCs Retained for Iteration 2 Sampling
METALS						
Aluminum				X		
Antimony						√
Arsenic						√
Barium						√
Beryllium		X				
Boron						√
Cadmium		X				
Chromium						√
Cobalt						√
Copper					X	
Lead				X		
Manganese						√
Mercury						√
Nickel				X		
Selenium						√
Silver		X				
Thallium						√
Vanadium				X		
Zinc				X		

TABLE 2. Summary of Results for COPC Identification

COPC	Eliminated Because Not Detected in a Soil or Groundwater Sample Above Sample Quantitation Limit (STEP 1)	Eliminated Because Maximum Soil or Groundwater Concentration < PSV (STEP 2)	Eliminated Because Detected Concentration < Representative Background Soil Concentration (STEP 3)	Eliminated Because Maximum Concentration Less than 2X PSV (STEP 4)	Eliminated Because Detected Concentrations in Perimeter Soil and Groundwater Samples were < PSV (STEP 5)	COPCs Retained for Iteration 2 Sampling
PESTICIDES AND HERBICIDES						
2,4,5-T		X				
2,4,5-TP (Silvex)		X				
2,4-D						√
2,4-DB						√
4,4´-DDD						√
4,4´-DDE						√
4,4´-DDT						√
Aldrin						√
alpha-BHC						√
alpha-Chlordane						√
beta-BHC						√
Dalapon						√
delta-BHC						√
Dicamba					X	
Dichlorprop						√
Dieldrin						√
Dinoseb						√
Endosulfan I						√
Endosulfan II						√
Endosulfan sulfate						√
Endrin						√
Endrin aldehyde						√
Endrin ketone						√
gamma-BHC						√
gamma-Chlordane						√
Heptachlor						√
Heptachlor epoxide						√
MCPA						√
MCPP						√
Methoxychlor					X	
Toxaphene						√

TABLE 2. Summary of Results for COPC Identification

COPC	Eliminated Because Not Detected in a Soil or Groundwater Sample Above Sample Quantitation Limit (STEP 1)	Eliminated Because Maximum Soil or Groundwater Concentration < PSV (STEP 2)	Eliminated Because Detected Concentration < Representative Background Soil Concentration (STEP 3)	Eliminated Because Maximum Concentration Less than 2X PSV (STEP 4)	Eliminated Because Detected Concentrations in Perimeter Soil and Groundwater Samples were < PSV (STEP 5)	COPCs Retained for Iteration 2 Sampling
SEMI-VOLATILE ORGANIC COMPOUNDS						
1,1´-Biphenyl		X				
1,2,4,5-Tetrachlorobenzene		X				
1,4-Dioxane						√
1-Methylnaphthalene						√
2,3,4,6-Tetrachlorophenol		X				
2,4,5-Trichlorophenol		X				
2,4,6-Trichlorophenol		X				
2,4-Dichlorophenol		X				
2,4-Dimethylphenol		X				
2,4-Dinitrophenol	X					
2,4-Dinitrotoluene	X					
2,6-Dinitrotoluene	X					
2-Chloronaphthalene	X					
2-Chlorophenol		X				
2-Methylnaphthalene						√
2-Methylphenol		X				
2-Nitroaniline	X					
2-Nitrophenol	X					
3,3´-Dichlorobenzidine		X				
3-Methylphenol		X				
3-Nitroaniline	X					
4,6-Dinitro-2-methylphenol		X				
4-Bromophenyl phenyl ether	X					
4-Chloro-3-methylphenol		X				
4-Chlorophenyl phenyl ether	X					
4-Methylphenol		X				
4-Nitroaniline	X					
4-Nitrophenol		X				
Acenaphthene						√
Acenaphthylene						√
Acetophenone		X				
Anthracene						√
Atrazine	X					
Benz(a)anthracene						√
Benzaldehyde		X				

TABLE 2. Summary of Results for COPC Identification

COPC	Eliminated Because Not Detected in a Soil or Groundwater Sample Above Sample Quantitation Limit (STEP 1)	Eliminated Because Maximum Soil or Groundwater Concentration < PSV (STEP 2)	Eliminated Because Detected Concentration < Representative Background Soil Concentration (STEP 3)	Eliminated Because Maximum Concentration Less than 2X PSV (STEP 4)	Eliminated Because Detected Concentrations in Perimeter Soil and Groundwater Samples were < PSV (STEP 5)	COPCs Retained for Iteration 2 Sampling
SEMI-VOLATILE ORGANIC COMPOUNDS, CONTINUED						
Benzo(a)pyrene						√
Benzo(b)fluoranthene						√
Benzo(g,h,i)perylene						√
Benzo(k)fluoranthene						√
Bis(2-chloroethoxy)methane	X					
Bis(2-chloroethyl)ether	X					
Bis(2-chloroisopropyl)ether	X					
Bis(2-ethylhexyl)phthalate						√
Butyl benzyl phthalate						√
Caprolactam		X				
Carbazole						√
Chrysene						√
Dibenz(a,h)anthracene						√
Dibenzofuran					X	
Diethyl phthalate		X				
Dimethyl phthalate		X				
Di-n-butyl phthalate		X				
Di-n-octyl phthalate		X				
Fluoranthene						√
Fluorene						√
Hexachlorobenzene		X				
Hexachlorobutadiene		X				
Hexachlorocyclopentadiene		X				
Hexachloroethane	X					
Indeno(1,2,3-cd)pyrene						√
Isophorone		X				
Naphthalene						√
Nitrobenzene	X					
N-Nitrosodi-n-propylamine	X					
N-Nitrosodiphenylamine		X				
Pentachlorophenol		X				
Phenanthrene						√
Phenol		X				
Pyrene						√

TABLE 2. Summary of Results for COPC Identification

COPC	Eliminated Because Not Detected in a Soil or Groundwater Sample Above Sample Quantitation Limit (STEP 1)	Eliminated Because Maximum Soil or Groundwater Concentration < PSV (STEP 2)	Eliminated Because Detected Concentration < Representative Background Soil Concentration (STEP 3)	Eliminated Because Maximum Concentration Less than 2X PSV (STEP 4)	Eliminated Because Detected Concentrations in Perimeter Soil and Groundwater Samples were < PSV (STEP 5)	COPCs Retained for Iteration 2 Sampling
VOLATILE ORGANIC COMPOUNDS, CONTINUED						
1,1,1,2-Tetrachloroethane	X					
1,1,1-Trichloroethane	X					
1,1,2,2-Tetrachloroethane	X					
1,1,2-Trichlor-1,2,2-trifluoroethane	X					
1,1,2-Trichloroethane	X					
1,1-Dichloroethane	X					
1,1-Dichloroethene	X					
1,2,3-Trichlorobenzene		X				
1,2,4-Trichlorobenzene				X		
1,2,4-Trimethylbenzene		X				
1,2-Dibromoethane	X					
1,2-Dichlorobenzene				X		
1,2-Dichloroethane					X	
1,2-Dichloropropane	X					
1,3,5-Trimethylbenzene		X				
1,3-Dichlorobenzene		X				
1,4-Dichlorobenzene						√
2-Butanone (MEK)		X				
2-Hexanone	X					
4-Methyl-2-pentanone	X					
Acetone		X				
Benzene						√
Bromodichloromethane	X					
Bromoform	X					
Bromomethane	X					
Carbon disulfide		X				
Carbon tetrachloride	X					
Chlorobenzene						√
Chloroethane	X					
Chloroform		X				
Chloromethane	X					
cis-1,2-Dichloroethene	X					
cis-1,3-Dichloropropene	X					
Cyclohexane		X				
Dibromochloromethane	X					
Dichlorodifluoromethane	X					
Ethylbenzene					X	

TABLE 2. Summary of Results for COPC Identification

COPC	Eliminated Because Not Detected in a Soil or Groundwater Sample Above Sample Quantitation Limit (STEP 1)	Eliminated Because Maximum Soil or Groundwater Concentration < PSV (STEP 2)	Eliminated Because Detected Concentration < Representative Background Soil Concentration (STEP 3)	Eliminated Because Maximum Concentration Less than 2X PSV (STEP 4)	Eliminated Because Detected Concentrations in Perimeter Soil and Groundwater Samples were < PSV (STEP 5)	COPCs Retained for Iteration 2 Sampling
VOLATILE ORGANIC COMPOUNDS, CONTINUED						
Isopropylbenzene (Cumene)		X				
Methyl acetate		X				
Methyl tert-butyl ether		X				
Methylcyclohexane		X				
Methylene chloride		X				
n-Butylbenzene		X				
n-Propylbenzene		X				
sec-Butylbenzene		X				
Styrene		X				
tert-Butylbenzene		X				
Tetrachloroethene		X				
Toluene		X				
trans-1,2-Dichloroethene	X					
trans-1,3-Dichloropropene	X					
Trichloroethene	X					
Trichlorofluoromethane	X					
Vinyl chloride	X					
Xylenes, total					X	
PETROLEUM HYDROCARBONS						
C6-C12						√
>C12-C28						√
>C28-C35						√
TPH						√

Notes:

X indicates the Step the COPC was eliminated as an Iteration 2 COPC; color coding indicates the step it was eliminated.

Light orange shading indicates that COPC was no longer considered an Iteration 2 COPC.

Shading colors correspond with shading in Table 2 and idenfies the Step that the COPC was eliminated or retained:

Green shading indicates COPC was eliminated because it was not detected above SQL in soil or groundwater.

Yellow shading indicates COPC was eliminated because it was not detected above the PSV.

Purple shading indicates COPC was eliminated because it was not detected below background concentrations (this step did not result in any COPC being eliminated).

Pink shading indicates COPC was eliminated because maximum concentration was less than 2 times PSV.

Orange shading indicates COPC was eliminated from the COPC list for Iteration 2 sampling because was not detected in perimeter soil or groundwater samples above the PSV.

Blue shading indicates COPC was retained as a COPC in Iteration 2 sampling.

TABLE 3. Summary of COPCs for Iteration 2

CHEMICAL OF POTENTIAL CONCERN (COPC)
METALS
Antimony
Arsenic
Barium
Boron
Chromium
Cobalt
Manganese
Mercury
Selenium
Thallium
PESTICIDES AND HERBICIDES
2,4-D
2,4-DB
4,4´-DDD
4,4´-DDE
4,4´-DDT
Aldrin
alpha-BHC
alpha-Chlordane
beta-BHC
Dalapon
delta-BHC
Dichlorprop
Dieldrin
Dinoseb
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Endrin ketone
gamma-BHC
gamma-Chlordane
Heptachlor
Heptachlor epoxide
MCPA
MCPP
Toxaphene

TABLE 3. Summary of COPCs for Iteration 2

CHEMICAL OF POTENTIAL CONCERN (COPC)
SEMI-VOLATILE ORGANIC COMPOUNDS
1,4-Dioxane
1-Methylnaphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Carbazole
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene
VOLATILE ORGANIC COMPOUNDS
1,4-Dichlorobenzene
Benzene
Chlorobenzene
PETROLEUM HYDROCARBONS
C6-C12
>C12-C28
>C28-C35
TPH

Table 4. Hazard Quotients for Compounds Shown in Attachment 2 that Exceed 2x the Minimum Preliminary Screening Value

COPC	Boring ID	Depth (ft bgs)	Concentration mg/kg (soil) mg/L (GW)	Minimum Preliminary Screening Value[1]	Hazard Quotient[2]
Copper	SB-108	0-0.5	23.7 JH	70 *	0.3
Copper	SB-108	1-2	21.8	70 *	0.3
Copper	SB-108	8-9	199	70 *	3
Dicamba	SB-40	0-0.5	0.18	0.0087 *	21
Dicamba	SB-40	3-5	0.17 JL	0.0087 *	20
Dicamba	SB-40	9-10	0.17	0.0087 *	20
Dicamba	SB-86	0-0.5	0.21	0.0087 *	24
Dicamba	SB-86	3-5	0.17 U	0.0087 *	non-detect
Dicamba	SB-86	7-9	<0.015	0.0087 *	non-detect
Dicamba	SB-90	0-0.5	0.021 JH	0.0087 *	2
Dicamba	SB-90	1.2-1.7	<0.016	0.0087 *	non-detect
Dicamba	SB-90	1.7-2.9	<0.017	0.0087 *	non-detect
Dicamba	SB-90	5-6	<0.018	0.0087 *	non-detect
Dicamba	SB-91	0-0.5	0.031 JH	0.0087 *	4
Dicamba	SB-91	1.2-1.7	<0.016	0.0087 *	non-detect
Dicamba	SB-91	1.7-2.7	<0.017	0.0087 *	non-detect
Dicamba	SB-91	5-5.7	<0.015	0.0087 *	non-detect
Methoxychlor	MW-10	GW	0.00017	0.00003 *	6
Dibenzofuran	SB-33	0-0.5	0.99	0.099 *	10
Dibenzofuran	SB-33	2-3	<0.00094	0.099 *	non-detect
Dibenzofuran	SB-33	8-9	<0.0012	0.099 *	non-detect
Dibenzofuran	SB-69	0-0.5	2.9 J	0.099 *	29
Dibenzofuran	SB-69	1-2	<0.00090	0.099 *	non-detect
1,2-Dichloroethane	MW-7	GW	0.091	0.005 **	18
1,2-Dichloroethane	MW-8	GW	0.17	0.005 **	34
Ethylbenzene	SB-17	0-0.5	<0.00077	5 *	non-detect

Table 4. Hazard Quotients for Compounds Shown in Attachment 2 that Exceed 2x the Minimum Preliminary Screening Value

COPC	Boring ID	Depth (ft bgs)	Concentration mg/kg (soil) mg/L (GW)	Minimum Preliminary Screening Value[1]	Hazard Quotient[2]
Ethylbenzene	SB-17	1-2	<0.00087	5 *	non-detect
Ethylbenzene	SB-17	9-10.6	90	5 *	17
Ethylbenzene	SB-85	0-0.5	<0.0010	5 *	non-detect
Ethylbenzene	SB-85	0.5-1	<0.00083	5 *	non-detect
Ethylbenzene	SB-85	9-10	71	5 *	14
Xylenes	SB-17	0-0.5	<0.0026	10 *	non-detect
Xylenes	SB-17	1-3	<0.030	10 *	non-detect
Xylenes	SB-17	9-10.6	780	10 *	78
Xylenes	SB-85	0-0.5	<0.0036	10 *	non-detect
Xylenes	SB-85	3-5	<0.0029	10 *	non-detect
Xylenes	SB-85	9-10	740	10 *	74
Xylenes	SB-108	0-0.5	<0.0012	10 *	non-detect
Xylenes	SB-108	1-2	<0.0010	10 *	non-detect
Xylenes	SB-108	8-9	38	10 *	4

1. The PSV is the minimum of the applicable ecological and human health PSV.

*Ecological PSV

**Human Health PSV

2. Hazard quotients (HQ) are the ratio of the detection to the applicable preliminary screening value (PSV), which shows the magnitude of the PSV exceedance.

The presentation of HQs on this table does not constitute a risk assessment.

ft bgs - feet below ground surface

mg/kg - milligrams per kilogram

GW - groundwater sample

Attachment 1
Sampling Detection and Exceedance Summary

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Metals - Soil

Human Health PSV[1] Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)[2]	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL[3] exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	6.40E+04	1.29E+02	0	0
Antimony	1.50E+01	3.81E-01	0	4
Arsenic	8.43E+00	2.78E+01	0	136
Barium	8.10E+03	2.14E+01	0	0
Beryllium	3.80E+01	4.26E-01	0	0
Boron	1.60E+04	3.65E+02	0	0
Cadmium	5.20E+01	9.52E-02	0	0
Chromium	2.70E+04	5.87E-01	0	0
Cobalt	2.30E+01	1.82E-01	0	18
Copper	1.30E+03	1.90E-01	0	0
Lead	4.00E+02	3.16E-01	0	0
Manganese	1.80E+03	2.78E+01	0	9
Mercury	2.10E+00	6.83E-01	0	19
Nickel	8.40E+02	1.71E-01	0	0
Selenium	3.10E+02	4.81E-01	0	0
Silver	9.70E+01	5.34E-01	0	0
Thallium	7.80E-01	4.42E-01	0	5
Vanadium	7.50E+01	5.99E-01	0	2
Zinc	9.90E+03	3.69E+01	0	0

Ecological[4] PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	3.00E+04	1.29E+02	0	0
Antimony	5.00E+00	3.81E-01	0	6
Arsenic	1.80E+01	2.78E+01	0	55
Barium	3.30E+02	2.14E+01	0	7
Beryllium	1.00E+01	4.26E-01	0	0
Boron	3.00E+01	3.65E+02	0	3
Cadmium	3.20E+01	9.52E-02	0	0
Chromium	3.00E+01	5.87E-01	0	11
Cobalt	3.61E+01	1.82E-01	0	2
Copper	7.00E+01	1.90E-01	0	1
Lead	1.85E+02	3.16E-01	0	1
Manganese	9.97E+02	2.78E+01	0	6
Mercury	2.43E-01	6.83E-01	0	31
Nickel	3.80E+01	1.71E-01	0	2
Selenium	6.79E-01	4.81E-01	1	74
Silver	5.60E+02	5.34E-01	0	0
Thallium	1.00E+00	4.42E-01	0	0
Vanadium	5.00E+01	5.99E-01	0	5
Zinc	4.16E+02	3.69E+01	0	2

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
Aluminum	2.94E+04	1.81E+03	308	308	100.00%
Antimony	8.79E+01	2.36E-01	135	302	44.70%
Arsenic	6.97E+03	1.52E+00	324	324	100.00%
Barium	8.53E+02	1.23E+01	308	308	100.00%
Beryllium	2.11E+00	1.40E-01	308	308	100.00%
Boron	9.40E+02	1.71E+00	289	308	93.83%
Cadmium	1.79E+01	5.74E-02	283	308	91.88%
Chromium	2.35E+02	6.47E+00	308	308	100.00%
Cobalt	1.05E+02	1.85E+00	308	308	100.00%
Copper	1.99E+02	3.48E+00	308	308	100.00%
Lead	3.56E+02	3.76E+00	308	308	100.00%
Manganese	6.42E+03	5.46E+01	308	308	100.00%
Mercury	6.58E+02	6.46E-04	300	319	94.04%
Nickel	4.88E+01	4.57E+00	308	308	100.00%
Selenium	1.94E+02	2.10E-01	301	308	97.73%
Silver	2.92E+00	9.02E-02	71	308	23.05%
Thallium	1.03E+01	7.56E-02	269	308	87.34%
Vanadium	9.88E+01	8.37E+00	302	308	98.05%
Zinc	5.19E+02	1.26E+01	302	308	98.05%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Metals - Groundwater

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	2.40E+01	1.80E-03	0	0
Antimony	6.00E-03	4.00E-04	0	0
Arsenic	1.00E-02	4.00E-02	0	3
Barium	2.00E+00	1.90E-02	0	0
Beryllium	4.00E-03	2.00E-04	0	0
Boron	4.90E+00	1.10E+00	0	3
Cadmium	5.00E-03	2.00E-04	0	0
Chromium	1.00E-01	4.00E-04	0	0
Cobalt	2.40E-01	2.00E-04	0	0
Copper	1.30E+00	1.00E-03	0	0
Lead	1.50E-02	6.00E-04	0	0
Manganese	1.10E+00	7.00E-03	0	3
Mercury	2.00E-03	3.00E-05	0	0
Nickel	4.90E-01	6.00E-04	0	0
Selenium	5.00E-02	1.10E-03	0	0
Silver	1.20E-01	2.00E-04	0	0
Thallium	2.00E-03	2.00E-04	0	0
Vanadium	4.40E-02	6.00E-04	0	0
Zinc	7.30E+00	2.00E-03	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	1.00E-01	1.80E-03	0	4
Antimony	5.00E-01	4.00E-04	0	0
Arsenic	7.80E-02	4.00E-02	0	1
Barium	2.50E+01	1.90E-02	0	0
Beryllium	1.00E-01	2.00E-04	0	0
Boron	1.20E+00	1.10E+00	0	6
Cadmium	8.75E-03	2.00E-04	0	0
Chromium	1.03E-01	4.00E-04	0	0
Cobalt	1.00E-03	2.00E-04	0	9
Copper	3.60E-03	1.00E-03	0	0
Lead	5.30E-03	6.00E-04	0	0
Manganese	1.00E-01	7.00E-03	0	10
Mercury	1.10E-03	3.00E-05	0	0
Nickel	1.31E-02	6.00E-04	0	0
Selenium	1.36E-01	1.10E-03	0	0
Silver	1.90E-04	2.00E-04	16	0
Thallium	2.13E-02	2.00E-04	0	0
Vanadium	5.00E-02	6.00E-04	0	0
Zinc	8.42E-02	2.00E-03	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
Aluminum	1.57E-01	6.94E-03	16	16	100.00%
Antimony	1.91E-03	4.91E-04	4	16	25.00%
Arsenic	7.17E+01	6.05E-04	17	17	100.00%
Barium	1.65E+00	3.02E-02	16	16	100.00%
Beryllium	No Detections		0	16	0.00%
Boron	2.59E+01	2.79E-01	16	16	100.00%
Cadmium	No Detections		0	16	0.00%
Chromium	No Detections		0	16	0.00%
Cobalt	1.18E-02	2.56E-04	14	16	87.50%
Copper	No Detections		0	16	0.00%
Lead	No Detections		0	16	0.00%
Manganese	4.29E+00	7.89E-03	16	16	100.00%
Mercury	4.84E-04	8.60E-05	2	16	12.50%
Nickel	7.31E-03	1.30E-03	11	16	68.75%
Selenium	7.28E-03	1.74E-03	7	16	43.75%
Silver	No Detections		0	16	0.00%
Thallium	2.35E-04	2.35E-04	1	16	6.25%
Vanadium	2.56E-02	1.74E-03	14	16	87.50%
Zinc	3.63E-02	2.11E-03	10	16	62.50%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Metals - Sediment[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	1.53E+05	3.66E+01	0	0
Antimony	8.32E+01	3.66E-01	0	0
Arsenic	1.15E+02	1.61E+01	0	1
Barium	2.29E+04	1.46E-01	0	0
Beryllium	2.66E+01	9.14E-02	0	0
Boron	1.07E+05	2.56E+00	0	0
Cadmium	1.09E+03	9.14E-02	0	0
Chromium	3.65E+04	1.65E-01	0	0
Cobalt	3.20E+04	1.28E-01	0	0
Copper	2.13E+04	1.83E-01	0	0
Lead	5.00E+02	9.14E-02	0	0
Manganese	1.40E+04	1.83E+01	0	0
Mercury	3.43E+01	4.37E-03	0	0
Nickel	1.40E+03	1.65E-01	0	0
Selenium	2.66E+03	3.29E-01	0	0
Silver	3.50E+02	1.46E-01	0	0
Thallium	4.26E+01	1.28E-01	0	0
Vanadium	3.29E+02	4.21E-01	0	0
Zinc	7.60E+04	4.57E-01	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	2.55E+04	3.66E+01	0	0
Antimony	2.00E+00	3.66E-01	0	1
Arsenic	9.79E+00	1.61E+01	0	6
Barium	NA	1.46E-01	No PSV	
Beryllium	NA	9.14E-02	No PSV	
Boron	NA	2.56E+00	No PSV	
Cadmium	9.90E-01	9.14E-02	0	0
Chromium	4.34E+01	1.65E-01	0	0
Cobalt	5.00E+01	1.28E-01	0	0
Copper	3.16E+01	1.83E-01	0	0
Lead	3.58E+01	9.14E-02	0	3
Manganese	4.60E+02	1.83E+01	0	4
Mercury	1.80E-01	4.37E-03	0	5
Nickel	2.27E+01	1.65E-01	0	0
Selenium	NA	3.29E-01	No PSV	
Silver	1.00E+00	1.46E-01	0	0
Thallium	NA	1.28E-01	No PSV	
Vanadium	NA	4.21E-01	No PSV	
Zinc	1.21E+02	4.57E-01	0	1

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
Aluminum	1.74E+04	1.08E+04	6	6	100.00%
Antimony	1.76E+01	6.68E-01	6	6	100.00%
Arsenic	3.54E+02	2.51E+01	6	6	100.00%
Barium	2.41E+02	1.70E+02	6	6	100.00%
Beryllium	1.32E+00	8.91E-01	6	6	100.00%
Boron	6.91E+00	2.64E+00	6	6	100.00%
Cadmium	7.84E-01	1.25E-01	6	6	100.00%
Chromium	2.42E+01	1.48E+01	6	6	100.00%
Cobalt	1.33E+01	6.92E+00	6	6	100.00%
Copper	1.93E+01	1.08E+01	6	6	100.00%
Lead	6.24E+01	1.64E+01	6	6	100.00%
Manganese	7.92E+02	2.41E+02	6	6	100.00%
Mercury	3.84E+00	8.84E-02	6	6	100.00%
Nickel	2.03E+01	1.43E+01	6	6	100.00%
Selenium	3.09E+00	1.39E+00	6	6	100.00%
Silver	No Detections		0	6	0.00%
Thallium	4.61E-01	1.17E-01	6	6	100.00%
Vanadium	4.86E+01	3.51E+01	6	6	100.00%
Zinc	1.66E+02	5.23E+01	6	6	100.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Metals - Surface Water[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)[5]	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	NA	1.80E-03	No PSV	
Antimony	1.07E+00	4.00E-04	0	0
Arsenic	1.00E-02	4.00E-04	0	2
Barium	NA	1.90E-03	No PSV	
Beryllium	NA	2.00E-04	No PSV	
Boron	NA	1.10E-02	No PSV	
Cadmium	NA	2.00E-04	No PSV	
Chromium	NA	4.00E-04	No PSV	
Cobalt	NA	2.00E-04	No PSV	
Copper	NA	1.00E-03	No PSV	
Lead	3.83E-03	6.00E-04	0	0
Manganese	1.00E-01	7.00E-03	0	2
Mercury	1.22E-05	4.00E-05	1	1
Nickel	1.14E+00	6.00E-04	0	0
Selenium	4.20E+00	1.10E-03	0	0
Silver	NA	2.00E-04	No PSV	
Thallium	2.30E-04	2.00E-04	0	0
Vanadium	NA	6.00E-04	No PSV	
Zinc	2.60E+01	2.00E-03	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
Aluminum	9.91E-01	1.80E-03	0	0
Antimony	8.80E-02	4.00E-04	0	0
Arsenic	3.40E-01	4.00E-04	0	0
Barium	1.10E-01	1.90E-03	0	1
Beryllium	1.30E-01	2.00E-04	0	0
Boron	3.00E-02	1.10E-02	0	2
Cadmium	4.37E-03	2.00E-04	0	0
Chromium	3.23E-01	4.00E-04	0	0
Cobalt	4.50E+01	2.00E-04	0	0
Copper	7.39E-03	1.00E-03	0	0
Lead	3.01E-02	6.00E-04	0	0
Manganese	2.30E+00	7.00E-03	0	1
Mercury	2.40E-03	4.00E-05	0	0
Nickel	2.61E-01	6.00E-04	0	0
Selenium	2.00E-02	1.10E-03	0	0
Silver	1.00E-03	2.00E-04	0	0
Thallium	1.10E-01	2.00E-04	0	0
Vanadium	2.80E-01	6.00E-04	0	0
Zinc	6.51E-02	2.00E-03	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
Aluminum	6.71E-01	1.23E-02	2	2	100.00%
Antimony	3.12E-03	3.12E-03	1	2	50.00%
Arsenic	2.04E-01	3.30E-02	2	2	100.00%
Barium	1.62E-01	9.52E-02	2	2	100.00%
Beryllium	No Detections		0	2	0.00%
Boron	1.90E-01	1.25E-01	2	2	100.00%
Cadmium	No Detections		0	2	0.00%
Chromium	No Detections		0	2	0.00%
Cobalt	1.86E-03	1.48E-03	2	2	100.00%
Copper	1.37E-03	1.09E-03	2	2	100.00%
Lead	No Detections		0	2	0.00%
Manganese	2.62E+00	9.05E-01	2	2	100.00%
Mercury	1.28E-04	1.28E-04	1	2	50.00%
Nickel	2.94E-03	2.11E-03	2	2	100.00%
Selenium	No Detections		0	2	0.00%
Silver	No Detections		0	2	0.00%
Thallium	No Detections		0	2	0.00%
Vanadium	1.12E-03	1.12E-03	1	2	50.00%
Zinc	4.10E-03	3.82E-03	2	2	100.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Metals - Notes

1. PSV - Preliminary Screening Value
2. mg/kg - milligrams per kilogram
3. SQL - Sample Quantitation Limit
4. Ecological soil samples only include surface soil depths of 0.0-0.5 feet below ground surface.
5. mg/L - milligrams per liter
6. HH Soil Preliminary Screening Values represent highest value between the lower of TCEQ PCL vs. EPA RSL vs. Texas-Specific Soil Background Concentrations and Background UTL
   (1) TRRP Tier I Residential Protective Concentration Level (PCL), $^{Tot}Soil_{Comb}$, 30-acre Source Area (30 TAC 350.51 (m)); Texas Risk Reduction Program, March 31, 2017. Screening levels for carcinogens adjusted to 10-6 risk;
   (2) Regional Screening Levels, lower of Risk-Based or MCL-Based SSL http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017;
   (3) Texas-Specific Soil Background Concentrations, 30 TAC 350.51(m), if the background value exceeds the applicable TRRP PCL or RSL.
   (4) Background UTLs from "Site-Specific Background Soil Concentration Calculations, US Oil Recovery Superfund Site" memo, Pastor, Behling & Wheeler, LLC. 2017
7. ECO Soil Preliminary Screening Values represent highest value between TECQ Soil Benchmark vs. Texas-Specific Soil Background Concentration and Background UTLs
   (1) TCEQ Soil Benchmarks. August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
   (2) Texas-Specific Soil Background Concentrations, 30 TAC 350.51(m), if the background value exceeds the soil benchmark value
   (3) Background UTLs from "Site-Specific Background Soil Concentration Calculations" memo
8. HH Sediment Preliminary Screening Values represent lowest values from:
   $^{Tot}Sed_{Comb}$ Protective Concentration Level; Texas Risk Reduction Program, March 31, 2006. Screening levels for carcinogens adjusted to 10-6 risk.
9. ECO Sediment Preliminary Screening Values represent lowest values from:
   (1) Sediment Benchmarks, August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
   (2) Screening Quick Reference Table for Inorganics in Sediment, NOAA 2008.
10. HH Surface Water Preliminary Screening Values represent values from:
    Human Health Risk-Based Exposure Limits (Fish only). May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
11. ECO Surface Water Preliminary Screening Values represent lowest Freshwater Acute values from:
    (1) Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
    (2) Screening Quick Reference Table for Inorganics in Water, NOAA 2008.
12. HH Groundwater Preliminary Screening Values represent lowest values from:
    (1) Maximum Contaminant Level (MCL), http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, June 2017; or, if there is not a MCL;
    (2) Protective Concentration Level; Texas Risk Reduction Program, March 2017. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. Screening levels for carcinogens adjusted to 10-6 risk.
13. ECO Groundwater Preliminary Screening Values represent lowest values from:
    (1) Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
    (2) Screening Quick Reference Table for Inorganics in Water, NOAA 2008.
14. On-property surface water and sediment sample data were also evaluated, but the compounds detected in these media were essentially the same as those compounds detected in on-property soil and groundwater samples. As such, those media were considered in the process after the soil and groundwater data were evaluated to ensure that a compound detected in on-property surface water and sediment was not inadvertently overlooked. Since evaluating those media was not a formal step in the COPC selection process, the applicable rows are not highlighted on this table.
15. Shading colors correspond with shading in Table 2 and identifies the Step that the COPC was eliminated or retained:

Green shading indicates COPC was eliminated because it was not detected above SQL in soil or groundwater.
Yellow shading indicates COPC was eliminated because it was not detected above the PSV.
Pink shading indicates COPC was eliminated because maximum concentration was less than 2 times PSV.
Orange shading indicates COPC was eliminated because concentrations in perimeter samples were less than PSV.
Blue shading indicates COPC was retained as a COPC in Iteration 2 sampling.

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Pesticides and Herbicides - Soil

Human Health PSV[1] Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)[2]	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL[3] exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	6.30E+02	1.70E-02	0	0
2,4,5-TP (Silvex)	5.10E+02	2.10E-02	0	0
2,4-D	7.00E+02	2.50E-03	0	0
2,4-DB	5.30E+02	1.30E-01	0	0
4,4´-DDD	1.40E+00	3.20E+00	0	19
4,4´-DDE	1.00E+00	7.40E-01	0	19
4,4´-DDT	5.40E-01	1.70E+01	0	33
Aldrin	5.00E-03	4.40E-01	1	68
alpha-BHC	2.50E-02	4.50E+01	0	27
alpha-Chlordane	1.30E+00	3.00E-01	0	8
beta-BHC	9.20E-02	4.50E+00	0	19
Dalapon	1.90E+03	4.20E-03	0	0
delta-BHC	2.90E-01	3.00E+00	0	7
Dicamba	1.90E+03	4.60E-03	0	0
Dichlorprop	6.70E+02	2.40E-01	0	0
Dieldrin	5.20E-02	7.40E-01	0	54
Dinoseb	6.30E+01	2.10E-01	0	0
Endosulfan I	9.10E+01	4.50E-02	0	0
Endosulfan II	2.70E+02	1.60E-01	0	0
Endosulfan sulfate	3.80E+02	8.90E-02	0	0
Endrin	9.00E+00	8.30E-01	0	1
Endrin aldehyde	1.90E+01	8.90E-02	0	0
Endrin ketone	1.90E+01	8.30E-02	0	0
gamma-BHC	1.10E-01	3.00E+00	0	9
gamma-Chlordane	7.30E-01	3.00E-01	0	10
Heptachlor	1.30E-02	4.50E-01	0	16
Heptachlor epoxide	4.60E-02	5.00E-02	0	22
MCPA	3.20E+01	1.50E+01	0	3
MCPP	6.30E+01	2.40E+01	0	3
Methoxychlor	2.70E+02	5.00E-01	0	0
Toxaphene	1.20E-01	7.10E+00	0	14

Ecological[4] PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	NA	1.70E-02	No PSV	
2,4,5-TP (Silvex)	1.10E-01	2.10E-02	0	0
2,4-D	1.20E-02	2.50E-03	0	4
2,4-DB	8.50E-02	1.30E-01	0	7
4,4´-DDD	7.60E-01	3.20E+00	0	1
4,4´-DDE	6.00E-01	7.40E-01	0	1
4,4´-DDT	3.00E-02	1.70E+01	0	29
Aldrin	3.30E-03	4.40E-01	0	21
alpha-BHC	9.90E-02	4.50E+01	0	3
alpha-Chlordane	2.90E-01	3.00E-01	0	0
beta-BHC	4.00E-03	4.50E+00	0	23
Dalapon	5.50E-03	4.20E-03	0	12
delta-BHC	9.90E+00	3.00E+00	0	0
Dicamba	8.70E-03	4.60E-03	1	3
Dichlorprop	2.50E-02	2.40E-01	0	4
Dieldrin	5.20E-02	7.40E-01	0	17
Dinoseb	2.50E-02	2.10E-01	0	4
Endosulfan I	1.20E-01	4.50E-02	0	1
Endosulfan II	1.20E-01	1.60E-01	0	2
Endosulfan sulfate	3.60E-02	8.90E-02	0	2
Endrin	1.30E-02	8.30E-01	0	9
Endrin aldehyde	1.10E-02	8.90E-02	0	12
Endrin ketone	3.70E-03	8.30E-02	1	9
gamma-BHC	5.00E-03	3.00E+00	0	7
gamma-Chlordane	2.30E-01	3.00E-01	0	1
Heptachlor	1.30E-02	4.50E-01	0	1
Heptachlor epoxide	1.50E-01	5.00E-02	0	1
MCPA	NA	1.50E+01	No PSV	
MCPP	8.00E+00	2.40E+01	0	2
Methoxychlor	NA	5.00E-01	No PSV	
Toxaphene	1.20E-01	7.10E+00	0	2

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
2,4,5-T	1.70E-01	2.50E-03	12	308	3.90%
2,4,5-TP (Silvex)	9.30E-02	4.40E-03	8	308	2.60%
2,4-D	2.00E-01	4.20E-03	12	308	3.90%
2,4-DB	1.50E+01	3.60E-03	60	309	19.42%
4,4´-DDD	1.20E+02	6.90E-04	171	316	54.11%
4,4´-DDE	5.40E+01	7.80E-04	187	313	59.74%
4,4´-DDT	7.60E+02	6.50E-04	172	315	54.60%
Aldrin	2.60E+01	4.70E-04	114	319	35.74%
alpha-BHC	1.00E+03	6.60E-04	104	318	32.70%
alpha-Chlordane	3.00E+01	6.00E-04	136	314	43.31%
beta-BHC	9.00E+01	6.20E-04	114	319	35.74%
Dalapon	4.80E-02	2.00E-03	49	311	15.76%
delta-BHC	7.00E+01	5.30E-04	69	314	21.97%
Dicamba	2.10E-01	2.10E-02	7	308	2.27%
Dichlorprop	1.40E+01	2.40E-03	36	308	11.69%
Dieldrin	1.90E+01	7.10E-04	149	314	47.45%
Dinoseb	5.60E+00	1.90E-03	43	308	13.96%
Endosulfan I	2.30E+00	5.20E-04	63	308	20.45%
Endosulfan II	7.00E+00	7.80E-04	84	308	27.27%
Endosulfan sulfate	3.90E+00	9.70E-04	51	308	16.56%
Endrin	1.10E+01	8.40E-04	70	309	22.65%
Endrin aldehyde	5.30E+00	8.80E-04	82	310	26.45%
Endrin ketone	1.50E+00	8.20E-04	56	308	18.18%
gamma-BHC	3.00E+02	3.30E-04	67	314	21.34%
gamma-Chlordane	1.30E+01	4.10E-04	140	314	44.59%
Heptachlor	5.70E+00	4.30E-04	69	308	22.40%
Heptachlor epoxide	3.60E+00	4.50E-04	96	308	31.17%
MCPA	1.60E+03	2.80E-01	23	308	7.47%
MCPP	4.70E+03	6.20E-01	45	308	14.61%
Methoxychlor	2.30E+01	4.40E-03	51	308	16.56%
Toxaphene	2.90E+02	2.40E-02	19	310	6.13%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Pesticides and Herbicides - Groundwater

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	2.40E-01	5.21E-05	0	0
2,4,5-TP (Silvex)	5.00E-02	5.21E-05	0	0
2,4-D	7.00E-02	6.25E-05	0	0
2,4-DB	2.00E-01	8.33E-05	0	0
4,4´-DDD	3.80E-04	2.50E-05	0	0
4,4´-DDE	2.70E-04	2.60E-06	0	0
4,4´-DDT	2.70E-03	2.60E-06	0	0
Aldrin	5.40E-06	1.30E-06	0	8
alpha-BHC	1.40E-05	1.30E-04	0	8
alpha-Chlordane	2.60E-04	2.60E-05	0	0
beta-BHC	5.10E-05	1.30E-04	0	10
Dalapon	2.00E-01	7.29E-05	0	0
delta-BHC	5.10E-05	1.30E-06	0	2
Dicamba	7.30E-01	5.21E-05	0	0
Dichlorprop	2.40E-01	8.33E-05	0	0
Dieldrin	5.70E-06	2.50E-05	0	14
Dinoseb	7.00E-03	5.21E-05	0	0
Endosulfan I	4.90E-01	1.30E-06	0	0
Endosulfan II	1.50E-01	5.10E-06	0	0
Endosulfan sulfate	1.50E-02	2.60E-06	0	0
Endrin	2.00E-03	5.10E-06	0	0
Endrin aldehyde	7.30E-03	2.60E-06	0	0
Endrin ketone	7.30E-03	2.60E-06	0	0
gamma-BHC	2.00E-04	1.30E-04	0	5
gamma-Chlordane	2.60E-04	2.60E-05	0	0
Heptachlor	4.00E-04	1.30E-05	0	0
Heptachlor epoxide	2.00E-04	1.30E-06	0	1
MCPA	1.20E-02	8.27E-02	0	1
MCPP	2.40E-02	7.29E-03	0	1
Methoxychlor	4.00E-02	1.30E-05	0	0
Toxaphene	3.00E-03	2.60E-05	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	NA	5.21E-05	0	0
2,4,5-TP (Silvex)	NA	5.21E-05	0	0
2,4-D	NA	6.25E-05	0	0
2,4-DB	NA	8.33E-05	0	0
4,4´-DDD	2.50E-05	2.50E-05	0	8
4,4´-DDE	1.40E-04	2.60E-06	0	1
4,4´-DDT	1.00E-06	2.60E-06	5	11
Aldrin	1.30E-04	1.30E-06	0	0
alpha-BHC	2.50E-02	1.30E-04	0	0
alpha-Chlordane	4.00E-06	2.60E-05	1	9
beta-BHC	NA	1.30E-04	0	0
Dalapon	NA	7.29E-05	0	0
delta-BHC	NA	1.30E-06	0	0
Dicamba	NA	5.21E-05	0	0
Dichlorprop	NA	8.33E-05	0	0
Dieldrin	2.00E-06	2.50E-05	0	16
Dinoseb	NA	5.21E-05	0	0
Endosulfan I	9.00E-06	1.30E-06	0	4
Endosulfan II	9.00E-06	5.10E-06	0	8
Endosulfan sulfate	9.00E-06	2.60E-06	0	2
Endrin	2.00E-06	5.10E-06	13	3
Endrin aldehyde	NA	2.60E-06	0	0
Endrin ketone	NA	2.60E-06	0	0
gamma-BHC	1.60E-05	1.30E-04	0	8
gamma-Chlordane	4.00E-06	2.60E-05	0	3
Heptachlor	4.00E-06	1.30E-05	0	3
Heptachlor epoxide	3.60E-06	1.30E-06	0	4
MCPA	4.20E-03	8.27E-02	15	1
MCPP	NA	7.29E-03	0	0
Methoxychlor	3.00E-05	1.30E-05	0	2
Toxaphene	2.00E-07	2.60E-05	16	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
2,4,5-T	1.83E-04	1.56E-04	2	16	12.50%
2,4,5-TP (Silvex)	2.14E-04	2.14E-04	1	16	6.25%
2,4-D	2.76E-03	2.07E-03	2	16	12.50%
2,4-DB	5.77E-03	2.71E-04	8	16	50.00%
4,4´-DDD	3.30E-04	6.40E-06	12	16	75.00%
4,4´-DDE	2.60E-04	1.70E-05	5	16	31.25%
4,4´-DDT	3.60E-04	3.50E-06	11	16	68.75%
Aldrin	6.90E-05	2.70E-06	10	16	62.50%
alpha-BHC	3.50E-03	3.00E-06	10	16	62.50%
alpha-Chlordane	2.10E-04	2.80E-06	10	16	62.50%
beta-BHC	5.60E-03	7.20E-06	14	16	87.50%
Dalapon	6.25E-04	2.35E-04	5	16	31.25%
delta-BHC	4.50E-04	5.70E-06	13	16	81.25%
Dicamba	2.19E-03	2.19E-03	1	16	6.25%
Dichlorprop	No Detections		0	16	0.00%
Dieldrin	1.30E-03	3.90E-06	16	16	100.00%
Dinoseb	No Detections		0	16	0.00%
Endosulfan I	3.90E-03	3.20E-05	5	16	31.25%
Endosulfan II	3.00E-04	6.20E-06	10	16	62.50%
Endosulfan sulfate	3.90E-05	1.20E-05	2	16	12.50%
Endrin	2.70E-04	4.50E-06	4	16	25.00%
Endrin aldehyde	5.00E-05	3.30E-06	4	16	25.00%
Endrin ketone	8.10E-05	8.50E-06	7	16	43.75%
gamma-BHC	1.30E-02	3.20E-06	14	16	87.50%
gamma-Chlordane	2.30E-04	1.40E-05	6	16	37.50%
Heptachlor	5.80E-05	8.00E-06	9	16	56.25%
Heptachlor epoxide	6.50E-04	1.20E-05	4	16	25.00%
MCPA	3.00E+00	3.00E+00	1	16	6.25%
MCPP	3.14E-01	1.66E-02	3	16	18.75%
Methoxychlor	1.70E-04	3.10E-05	2	16	12.50%
Toxaphene	No Detections		0	16	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Pesticides and Herbicides - Sediment[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	1.53E+03	4.00E-03	0	0
2,4,5-TP (Silvex)	1.22E+03	4.80E-03	0	0
2,4-D	2.53E+03	2.00E-03	0	0
2,4-DB	1.22E+03	2.50E-03	0	0
4,4´-DDD	1.23E+01	2.60E-02	0	0
4,4´-DDE	8.66E+00	1.30E-02	0	0
4,4´-DDT	8.66E+00	2.60E-02	0	0
Aldrin	1.00E-01	7.80E-03	0	1
alpha-BHC	4.00E-01	1.70E-03	0	0
alpha-Chlordane	4.06E+00	1.00E-02	0	0
beta-BHC	1.42E+00	1.70E-03	0	0
Dalapon	4.59E+03	3.40E-03	0	0
delta-BHC	1.42E+00	1.10E-03	0	0
Dicamba	4.59E+03	3.70E-03	0	0
Dichlorprop	1.53E+03	4.50E-03	0	0
Dieldrin	8.88E-02	2.60E-02	0	2
Dinoseb	1.53E+02	4.00E-03	0	0
Endosulfan I	3.06E+02	1.70E-03	0	0
Endosulfan II	9.19E+02	1.60E-02	0	0
Endosulfan sulfate	9.19E+02	3.40E-03	0	0
Endrin	4.59E+01	3.40E-03	0	0
Endrin aldehyde	4.59E+01	1.60E-02	0	0
Endrin ketone	4.59E+01	3.40E-03	0	0
gamma-BHC	2.00E+00	1.10E-03	0	0
gamma-Chlordane	4.10E+00	5.20E-03	0	0
Heptachlor	3.16E-01	1.70E-03	0	0
Heptachlor epoxide	1.56E-01	7.80E-03	0	1
MCPA	7.65E+01	2.80E-01	0	0
MCPP	1.53E+02	4.50E-01	0	0
Methoxychlor	7.65E+02	1.90E-02	0	0
Toxaphene	1.29E+00	2.70E-02	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	NA	4.00E-03	No PSV	
2,4,5-TP (Silvex)	NA	4.80E-03	No PSV	
2,4-D	NA	2.00E-03	No PSV	
2,4-DB	NA	2.50E-03	No PSV	
4,4´-DDD	4.88E-03	2.60E-02	0	3
4,4´-DDE	3.16E-03	1.30E-02	0	5
4,4´-DDT	4.16E-03	2.60E-02	0	5
Aldrin	2.00E-03	7.80E-03	0	3
alpha-BHC	6.00E-03	1.70E-03	0	0
alpha-Chlordane	3.24E-03	1.00E-02	0	4
beta-BHC	5.00E-03	1.70E-03	0	1
Dalapon	NA	3.40E-03	No PSV	
delta-BHC	1.30E-01	1.10E-03	0	0
Dicamba	NA	3.70E-03	No PSV	
Dichlorprop	NA	4.50E-03	No PSV	
Dieldrin	1.90E-03	2.60E-02	0	5
Dinoseb	NA	4.00E-03	No PSV	
Endosulfan I	2.90E-03	1.70E-03	0	1
Endosulfan II	1.40E-02	1.60E-02	0	3
Endosulfan sulfate	NA	3.40E-03	No PSV	
Endrin	2.22E-03	3.40E-03	2	3
Endrin aldehyde	NA	1.60E-02	No PSV	
Endrin ketone	NA	3.40E-03	No PSV	
gamma-BHC	2.37E-03	1.10E-03	0	0
gamma-Chlordane	3.24E-03	5.20E-03	0	5
Heptachlor	6.00E-04	1.70E-03	3	2
Heptachlor epoxide	2.47E-03	7.80E-03	0	3
MCPA	NA	2.80E-01	No PSV	
MCPP	NA	4.50E-01	No PSV	
Methoxychlor	1.90E-02	1.90E-02	0	2
Toxaphene	1.00E-04	2.70E-02	6	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
2,4,5-T	1.10E-02	1.10E-02	1	6	16.67%
2,4,5-TP (Silvex)	No Detections		0	6	0.00%
2,4-D	No Detections		0	6	0.00%
2,4-DB	5.00E-02	1.10E-02	2	6	33.33%
4,4´-DDD	1.20E+00	4.60E-02	3	6	50.00%
4,4´-DDE	1.10E+00	2.40E-02	5	6	83.33%
4,4´-DDT	3.30E-01	4.90E-03	5	6	83.33%
Aldrin	1.50E-01	1.30E-02	3	6	50.00%
alpha-BHC	No Detections		0	6	0.00%
alpha-Chlordane	6.30E-01	4.60E-03	4	6	66.67%
beta-BHC	7.70E-02	2.10E-03	2	6	33.33%
Dalapon	No Detections		0	6	0.00%
delta-BHC	2.80E-02	2.80E-02	1	6	16.67%
Dicamba	No Detections		0	6	0.00%
Dichlorprop	No Detections		0	6	0.00%
Dieldrin	9.60E-01	2.20E-02	5	6	83.33%
Dinoseb	2.10E-01	3.60E-03	2	6	33.33%
Endosulfan I	1.00E-01	1.00E-01	1	6	16.67%
Endosulfan II	1.10E+00	1.90E-02	3	6	50.00%
Endosulfan sulfate	1.60E-01	1.60E-01	1	6	16.67%
Endrin	1.90E-01	5.50E-03	3	6	50.00%
Endrin aldehyde	5.50E-01	8.60E-03	3	6	50.00%
Endrin ketone	5.10E-02	7.10E-03	3	6	50.00%
gamma-BHC	No Detections		0	6	0.00%
gamma-Chlordane	2.80E-01	4.20E-03	5	6	83.33%
Heptachlor	3.30E-02	2.30E-03	2	6	33.33%
Heptachlor epoxide	3.10E-01	2.80E-03	3	6	50.00%
MCPA	No Detections		0	6	0.00%
MCPP	No Detections		0	6	0.00%
Methoxychlor	1.10E+00	2.60E-02	2	6	33.33%
Toxaphene	No Detections		0	6	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Pesticides and Herbicides - Surface Water[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)[5]	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	NA	5.00E-05	No PSV	
2,4,5-TP (Silvex)	2.10E-02	5.00E-05	0	0
2,4-D	NA	6.00E-05	No PSV	
2,4-DB	NA	8.00E-05	No PSV	
4,4´-DDD	5.90E-06	2.50E-06	0	1
4,4´-DDE	4.00E-06	2.50E-06	0	1
4,4´-DDT	4.00E-06	2.50E-06	0	2
Aldrin	1.00E-06	1.20E-06	1	1
alpha-BHC	9.30E-05	1.20E-06	0	0
alpha-Chlordane	8.10E-06	2.50E-06	0	1
beta-BHC	3.30E-04	1.20E-06	0	0
Dalapon	NA	7.00E-05	No PSV	
delta-BHC	4.14E-05	1.20E-06	0	0
Dicamba	NA	5.00E-05	No PSV	
Dichlorprop	NA	8.00E-05	No PSV	
Dieldrin	1.00E-06	2.50E-06	0	2
Dinoseb	NA	5.00E-05	No PSV	
Endosulfan I	8.90E-02	1.20E-06	0	0
Endosulfan II	8.90E-02	2.50E-06	0	0
Endosulfan sulfate	8.90E-02	2.50E-06	0	0
Endrin	2.00E-04	2.50E-06	0	0
Endrin aldehyde	3.00E-04	2.50E-06	0	0
Endrin ketone	NA	2.50E-06	No PSV	
gamma-BHC	6.20E-03	1.20E-06	0	0
gamma-Chlordane	8.10E-06	2.50E-06	0	0
Heptachlor	1.50E-06	1.20E-06	0	0
Heptachlor epoxide	7.50E-07	1.20E-06	1	1
MCPA	NA	8.10E-03	No PSV	
MCPP	NA	7.00E-03	No PSV	
Methoxychlor	1.61E-03	1.20E-05	0	0
Toxaphene	5.30E-06	2.50E-05	2	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
2,4,5-T	NA	5.00E-05	No PSV	
2,4,5-TP (Silvex)	NA	5.00E-05	No PSV	
2,4-D	NA	6.00E-05	No PSV	
2,4-DB	NA	8.00E-05	No PSV	
4,4´-DDD	1.90E-04	2.50E-06	0	0
4,4´-DDE	1.00E+00	2.50E-06	0	0
4,4´-DDT	1.10E-03	2.50E-06	0	0
Aldrin	3.00E-03	1.20E-06	0	0
alpha-BHC	4.47E-01	1.20E-06	0	0
alpha-Chlordane	2.40E-03	2.50E-06	0	0
beta-BHC	4.98E-01	1.20E-06	0	0
Dalapon	NA	7.00E-05	No PSV	
delta-BHC	2.49E-01	1.20E-06	0	0
Dicamba	NA	5.00E-05	No PSV	
Dichlorprop	NA	8.00E-05	No PSV	
Dieldrin	2.40E-04	2.50E-06	0	0
Dinoseb	NA	5.00E-05	No PSV	
Endosulfan I	2.20E-04	1.20E-06	0	0
Endosulfan II	2.20E-04	2.50E-06	0	0
Endosulfan sulfate	2.20E-04	2.50E-06	0	0
Endrin	8.60E-05	2.50E-06	0	0
Endrin aldehyde	3.63E+01	2.50E-06	0	0
Endrin ketone	NA	2.50E-06	No PSV	
gamma-BHC	1.13E-03	1.20E-06	0	0
gamma-Chlordane	2.40E-03	2.50E-06	0	0
Heptachlor	5.20E-04	1.20E-06	0	0
Heptachlor epoxide	5.20E-04	1.20E-06	0	0
MCPA	NA	8.10E-03	No PSV	
MCPP	NA	7.00E-03	No PSV	
Methoxychlor	NA	1.20E-05	No PSV	
Toxaphene	2.00E-07	2.50E-05	2	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
2,4,5-T	No Detections		0	2	0.00%
2,4,5-TP (Silvex)	No Detections		0	2	0.00%
2,4-D	No Detections		0	2	0.00%
2,4-DB	No Detections		0	2	0.00%
4,4´-DDD	8.80E-05	2.90E-06	2	2	100.00%
4,4´-DDE	4.40E-05	4.40E-05	1	2	50.00%
4,4´-DDT	5.10E-05	8.70E-06	2	2	100.00%
Aldrin	2.40E-05	2.40E-05	1	2	50.00%
alpha-BHC	No Detections		0	2	0.00%
alpha-Chlordane	6.80E-05	6.80E-05	1	2	50.00%
beta-BHC	6.10E-05	2.00E-06	2	2	100.00%
Dalapon	No Detections		0	2	0.00%
delta-BHC	No Detections		0	2	0.00%
Dicamba	No Detections		0	2	0.00%
Dichlorprop	8.29E-04	1.14E-04	2	2	100.00%
Dieldrin	1.40E-04	7.10E-05	2	2	100.00%
Dinoseb	No Detections		0	2	0.00%
Endosulfan I	No Detections		0	2	0.00%
Endosulfan II	7.00E-05	4.10E-06	2	2	100.00%
Endosulfan sulfate	No Detections		0	2	0.00%
Endrin	1.00E-05	1.00E-05	1	2	50.00%
Endrin aldehyde	5.70E-05	4.30E-06	2	2	100.00%
Endrin ketone	1.70E-05	1.70E-05	1	2	50.00%
gamma-BHC	No Detections		0	2	0.00%
gamma-Chlordane	2.80E-06	2.80E-06	1	2	50.00%
Heptachlor	No Detections		0	2	0.00%
Heptachlor epoxide	2.50E-06	2.50E-06	1	2	50.00%
MCPA	No Detections		0	2	0.00%
MCPP	No Detections		0	2	0.00%
Methoxychlor	No Detections		0	2	0.00%
Toxaphene	No Detections		0	2	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Pesticides and Herbicides - Notes

1. PSV - Preliminary Screening Value
2. mg/kg - milligrams per kilogram
3. SQL - Sample Quantitation Limit
4. Ecological soil samples only include surface soil depths of 0.0-0.5 feet below ground surface.
5. mg/L - milligrams per liter
6. HH Soil Preliminary Screening Values represent highest value between the lower of TCEQ PCL vs. EPA RSL and Background UTL
   (1) TRRP Tier I Residential Protective Concentration Level (PCL), $^{Tot}Soil_{Comb}$, 30-acre Source Area (30 TAC 350.51(m)); Texas Risk Reduction Program, March 31, 2017. Screening levels for carcinogens adjusted to 10-6 risk.
   (2) Regional Screening Levels, Lower of Risk-Based or MCL-Based SSL http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017.
   (3) Background UTLs from "Site-Specific Background Soil Concentration Calculations, US Oil Recovery Superfund Site" memo, Pastor, Behling & Wheeler, LLC. 2017
7. ECO Soil Preliminary Screening Values represent highest value between TECQ Soil Benchmark and Background UTLs
   (1) EPA Region V Mammals or Plants, USEPA, 2003
   (2) Background UTLs from "Site-Specific Background Soil Concentration Calculations" memo
8. HH Sediment Preliminary Screening Values represent lowest values from:
   $^{Tot}Sed_{Comb}$ Protective Concentration Level; Texas Risk Reduction Program, March 31, 2006. Screening levels for carcinogens adjusted to 10-6 risk.
9. ECO Sediment Preliminary Screening Values represent values from:
   TCEQ Sediment Benchmarks, August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
10. HH Surface Water Preliminary Screening Values represent values from:
    Human Health Risk-Based Exposure Limits (Fish only). May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
11. ECO Surface Water Preliminary Screening Values represent Freshwater Acute values from:
    Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
12. HH Groundwater Preliminary Screening Values represent lowest values from:
    (1) Maximum Contaminant Level, http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, June 2017.
    (2) Protective Concentration Level; Texas Risk Reduction Program, March 2017. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. Screening levels for carcinogens adjusted to 10-6 risk.
13. ECO Groundwater Preliminary Screening Values represent values from:
    Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
14. On-property surface water and sediment sample data were also evaluated, but the compounds detected in these media were essentially the same as those compounds detected in on-property soil and groundwater samples.
    As such, those media were considered in the process after the soil and groundwater data were evaluated to ensure that a compound detected in on-property surface water and sediment was not inadvertently overlooked.
    Since evaluating those media was not a formal step in the COPC selection process, the applicable rows are not highlighted on this table.
15. Shading colors correspond with shading in Table 2 and identifies the Step that the COPC was eliminated or retained:

Green shading indicates COPC was eliminated because it was not detected above SQL in soil or groundwater.
Yellow shading indicates COPC was eliminated because it was not detected above the PSV.
Pink shading indicates COPC was eliminated because maximum concentration was less than 2 times PSV.
Orange shading indicates COPC was eliminated because concentrations in perimeter samples were less than PSV.
Blue shading indicates COPC was retained as a COPC in Iteration 2 sampling.

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Semi-Volatile Organic Compounds - Soil

Human Health PSV[1] Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)[2]	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL[3] exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	4.70E+01	3.00E-02	0	0
1,2,4,5-Tetrachlorobenzene	2.00E+01	1.80E-02	0	0
1,4-Dioxane	3.70E+00	3.90E-02	0	0
1-Methylnaphthalene*T	1.50E+01	2.70E-02	0	0
2,3,4,6-Tetrachlorophenol	1.80E+02	5.20E-02	0	0
2,4,5-Trichlorophenol	6.30E+03	4.50E-02	0	0
2,4,6-Trichlorophenol	4.90E+01	3.00E-02	0	0
2,4-Dichlorophenol	1.90E+02	2.30E-02	0	0
2,4-Dimethylphenol	1.30E+03	5.90E-02	0	0
2,4-Dinitrophenol	1.30E+02	8.10E-02	0	0
2,4-Dinitrotoluene	6.90E-01	1.60E-02	0	0
2,6-Dinitrotoluene	3.60E-01	5.90E-02	0	0
2-Chloronaphthalene	4.80E+03	2.30E-02	0	0
2-Chlorophenol	3.90E+02	2.30E-02	0	0
2-Methylnaphthalene*L,*T	2.40E+02	9.00E-03	0	0
2-Methylphenol	3.20E+03	2.00E-02	0	0
2-Nitroaniline	1.10E+01	3.40E-02	0	0
2-Nitrophenol	1.30E+02	4.50E-02	0	0
3,3´-Dichlorobenzidine	1.00E+00	4.50E-02	0	0
3-Methylphenol	3.20E+03	1.80E-02	0	0
3-Nitroaniline	1.20E+01	3.40E-02	0	0
4,6-Dinitro-2-methylphenol	5.10E+00	3.80E-02	0	0
4-Bromophenyl phenyl ether	3.00E-02	2.90E-02	0	0
4-Chloro-3-methylphenol	3.30E+02	1.30E-02	0	0
4-Chlorophenyl phenyl ether	2.00E-02	2.70E-02	0	3
4-Methylphenol	3.30E+02	1.80E-02	0	0
4-Nitroaniline	2.70E+01	3.90E-02	0	0
4-Nitrophenol	1.30E+02	3.40E-02	0	0
Acenaphthene*L,*T	3.00E+03	9.00E-03	0	0
Acenaphthylene*L,*T	3.80E+03	1.80E-02	0	0
Acetophenone	6.70E+03	1.40E-02	0	0
Anthracene*L,*T	1.80E+04	9.00E-02	0	0
Atrazine	2.10E+00	3.60E-02	0	0
Benz(a)anthracene*H,*T	4.10E-01	2.90E-01	0	5
Benzaldehyde	1.70E+02	2.20E-02	0	0
Benzo(a)pyrene*H,*T	4.10E-01	1.80E-01	0	7
Benzo(b)fluoranthene*T	1.10E+00	2.20E-01	0	2
Benzo(g,h,i)perylene*T	1.80E+03	1.30E-01	0	0
Benzo(k)fluoranthene*T	1.10E+01	1.60E-01	0	1
Bis(2-chloroethoxy)methane	2.50E-01	1.60E-02	0	0
Bis(2-chloroethyl)ether	1.40E-01	2.00E-02	0	0
Bis(2-chloroisopropyl)ether	4.10E+00	2.50E-02	0	0
Bis(2-ethylhexyl)phthalate	4.30E+00	1.10E-01	0	1
Butyl benzyl phthalate	1.60E+02	8.10E-02	0	0
Caprolactam	3.10E+04	2.20E-02	0	0
Carbazole	2.30E+01	2.20E-02	0	0
Chrysene*H,*T	1.10E+02	1.40E-01	0	0
Dibenz(a,h)anthracene*H,*T	2.94E-01	2.90E-02	0	3
Dibenzofuran	7.30E+01	1.30E-02	0	0
Diethyl phthalate	5.10E+04	1.80E-02	0	0
Dimethyl phthalate	5.30E+04	1.40E-02	0	0
Di-n-butyl phthalate	6.20E+03	2.20E-02	0	0
Di-n-octyl phthalate	6.30E+02	1.60E-02	0	0
Fluoranthene*H,*T	2.30E+03	9.90E-01	0	0
Fluorene*L,*T	2.30E+03	2.00E-02	0	0
Hexachlorobenzene	1.00E-01	1.60E-02	0	0
Hexachlorobutadiene	1.20E+00	2.20E-02	0	0
Hexachlorocyclopentadiene	1.80E+00	1.40E-02	0	0
Hexachloroethane	1.80E+00	2.70E-02	0	0
Indeno(1,2,3-cd)pyrene*T	5.70E-01	1.40E-01	0	3
Isophorone	4.90E+02	1.40E-02	0	0
Naphthalene*L,*T	3.80E+00	1.10E-02	0	0
Nitrobenzene	3.40E+00	1.60E-02	0	0
N-Nitrosodi-n-propylamine	4.00E-02	2.00E-02	0	0
N-Nitrosodiphenylamine	5.70E+01	1.30E-02	0	0
Pentachlorophenol	7.00E-02	5.90E-02	0	0
Phenanthrene*L,*T	1.70E+03	2.70E-01	0	0
Phenol	1.90E+04	2.00E-02	0	0
Pyrene*H,*T	1.70E+03	1.10E-01	0	0
High Molecular Weight PAHs	NA	0.00E+00	0	0
Low Molecular Weight PAHs	NA	0.00E+00	0	0
Total PAHs	NA	0.00E+00	0	0

Ecological[4] PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	6.00E+01	3.00E-02	0	0
1,2,4,5-Tetrachlorobenzene	2.00E+00	1.80E-02	0	0
1,4-Dioxane	NA	3.90E-02	No PSV	
1-Methylnaphthalene*T	3.24E+00	2.70E-02	0	0
2,3,4,6-Tetrachlorophenol	2.00E-01	5.20E-02	0	0
2,4,5-Trichlorophenol	4.00E+00	4.50E-02	0	0
2,4,6-Trichlorophenol	1.00E+01	3.00E-02	0	0
2,4-Dichlorophenol	NA	2.30E-02	No PSV	
2,4-Dimethylphenol	3.49E+00	5.90E-02	0	0
2,4-Dinitrophenol	2.00E+01	8.10E-02	0	0
2,4-Dinitrotoluene	6.00E+00	1.60E-02	0	0
2,6-Dinitrotoluene	5.00E+00	5.90E-02	0	0
2-Chloronaphthalene	1.22E-02	2.30E-02	2	0
2-Chlorophenol	2.43E-01	2.30E-02	0	0
2-Methylnaphthalene*L,*T	3.24E+00	9.00E-03	0	0
2-Methylphenol	4.04E+01	2.00E-02	0	0
2-Nitroaniline	7.41E+01	3.40E-02	0	0
2-Nitrophenol	1.60E+00	4.50E-02	0	0
3,3´-Dichlorobenzidine	6.46E-01	4.50E-02	0	0
3-Methylphenol	3.50E+00	1.80E-02	0	0
3-Nitroaniline	3.16E+00	3.40E-02	0	0
4,6-Dinitro-2-methylphenol	NA	3.80E-02	No PSV	
4-Bromophenyl phenyl ether	NA	2.90E-02	No PSV	
4-Chloro-3-methylphenol	7.95E+00	1.30E-02	0	0
4-Chlorophenyl phenyl ether	NA	2.70E-02	0	0
4-Methylphenol	3.49E+00	1.80E-02	0	0
4-Nitroaniline	2.19E+01	3.90E-02	0	0
4-Nitrophenol	7.00E+00	3.40E-02	0	0
Acenaphthene*L,*T	2.00E+01	9.00E-03	0	0
Acenaphthylene*L,*T	6.82E+02	1.80E-02	0	0
Acetophenone	3.00E+02	1.40E-02	0	0
Anthracene*L,*T	1.48E+03	9.00E-02	0	0
Atrazine	NA	3.60E-02	0	0
Benz(a)anthracene*H,*T	5.21E+00	2.90E-01	0	2
Benzaldehyde	2.55E-01	2.20E-02	0	1
Benzo(a)pyrene*H,*T	1.52E+00	1.80E-01	0	2
Benzo(b)fluoranthene*T	5.98E+01	2.20E-01	0	0
Benzo(g,h,i)perylene*T	1.19E+02	1.30E-01	0	0
Benzo(k)fluoranthene*T	1.48E+02	1.60E-01	0	0
Bis(2-chloroethoxy)methane	3.02E-01	1.60E-02	0	0
Bis(2-chloroethyl)ether	2.37E+01	2.00E-02	0	0
Bis(2-chloroisopropyl)ether	1.99E+01	2.50E-02	0	0
Bis(2-ethylhexyl)phthalate	9.25E-01	1.10E-01	0	1
Butyl benzyl phthalate	2.91E-01	8.10E-02	0	1
Caprolactam	2.55E-01	2.20E-02	0	0
Carbazole	9.94E-02	2.20E-02	0	3
Chrysene*H,*T	4.73E+00	1.40E-01	0	2
Dibenz(a,h)anthracene*H,*T	1.84E+01	2.90E-02	0	0
Dibenzofuran	9.94E-02	1.30E-02	0	2
Diethyl phthalate	1.00E+02	1.80E-02	0	0
Dimethyl phthalate	2.00E+02	1.40E-02	0	0
Di-n-butyl phthalate	2.00E+02	2.20E-02	0	0
Di-n-octyl phthalate	7.09E+02	1.60E-02	0	0
Fluoranthene*H,*T	1.22E+02	9.90E-01	0	0
Fluorene*L,*T	3.00E+01	2.00E-02	0	0
Hexachlorobenzene	1.99E-01	1.60E-02	0	0
Hexachlorobutadiene	3.98E-02	2.20E-02	0	0
Hexachlorocyclopentadiene	1.00E+01	1.40E-02	0	0
Hexachloroethane	5.96E-01	2.70E-02	0	0
Indeno(1,2,3-cd)pyrene*T	1.09E+02	1.40E-01	0	0
Isophorone	1.39E+02	1.40E-02	0	0
Naphthalene*L,*T	1.10E-01	1.10E-02	0	5
Nitrobenzene	4.00E+01	1.60E-02	0	0
N-Nitrosodi-n-propylamine	5.44E-01	2.00E-02	0	0
N-Nitrosodiphenylamine	2.00E+01	1.30E-02	0	0
Pentachlorophenol	5.00E+00	5.90E-02	0	0
Phenanthrene*L,*T	4.57E+01	2.70E-01	0	0
Phenol	3.00E+01	2.00E-02	0	0
Pyrene*H,*T	7.85E+01	1.10E-01	0	0
High Molecular Weight PAHs	1.80E+01	2.00E+00	0	2
Low Molecular Weight PAHs	2.90E+01	2.00E+00	0	2
Total PAHs	NA	0.00E+00	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1´-Biphenyl	1.80E-01	2.60E-03	29	308	9.42%
1,2,4,5-Tetrachlorobenzene	9.00E-01	3.10E-03	12	308	3.90%
1,4-Dioxane	1.70E-02	1.70E-02	1	308	0.32%
1-Methylnaphthalene	3.40E-01	2.10E-03	58	308	18.83%
2,3,4,6-Tetrachlorophenol	1.50E-01	1.30E-01	2	308	0.65%
2,4,5-Trichlorophenol	2.10E-01	3.80E-03	11	308	3.57%
2,4,6-Trichlorophenol	1.60E-01	2.80E-03	6	308	1.95%
2,4-Dichlorophenol	2.20E-01	2.30E-03	15	308	4.87%
2,4-Dimethylphenol	2.90E-01	7.30E-02	2	308	0.65%
2,4-Dinitrophenol	No Detections		0	308	0.00%
2,4-Dinitrotoluene	No Detections		0	308	0.00%
2,6-Dinitrotoluene	No Detections		0	308	0.00%
2-Chloronaphthalene	No Detections		0	308	0.00%
2-Chlorophenol	5.80E-02	4.30E-03	19	308	6.17%
2-Methylnaphthalene	1.00E+00	8.60E-04	87	308	28.25%
2-Methylphenol	1.20E-02	2.30E-03	7	308	2.27%
2-Nitroaniline	No Detections		0	308	0.00%
2-Nitrophenol	No Detections		0	308	0.00%
3,3´-Dichlorobenzidine	1.80E-02	1.80E-02	1	309	0.32%
3-Methylphenol	3.70E-02	1.50E-03	18	308	5.84%
3-Nitroaniline	No Detections		0	308	0.00%
4,6-Dinitro-2-methylphenol	7.90E-03	7.90E-03	1	308	0.32%
4-Bromophenyl phenyl ether	No Detections		0	308	0.00%
4-Chloro-3-methylphenol	8.80E-02	1.80E-02	2	308	0.65%
4-Chlorophenyl phenyl ether	No Detections		0	308	0.00%
4-Methylphenol	3.70E-02	1.50E-03	18	308	5.84%
4-Nitroaniline	No Detections		0	308	0.00%
4-Nitrophenol	6.00E-03	6.00E-03	1	308	0.32%
Acenaphthene	3.90E+00	6.20E-04	65	308	21.10%
Acenaphthylene	8.20E-01	1.40E-03	37	308	12.01%
Acetophenone	1.20E-01	1.50E-03	42	308	13.64%
Anthracene	8.70E+00	7.20E-04	123	308	39.94%
Atrazine	No Detections		0	308	0.00%
Benz(a)anthracene	2.60E+01	2.10E-03	155	309	50.16%
Benzaldehyde	2.50E-02	2.00E-03	20	308	6.49%
Benzo(a)pyrene	2.50E+01	1.60E-03	163	308	52.92%
Benzo(b)fluoranthene	3.40E+01	1.90E-03	171	308	55.52%
Benzo(g,h,i)perylene	1.50E+01	1.20E-03	136	308	44.16%
Benzo(k)fluoranthene	1.30E+01	1.20E-03	159	308	51.62%
Bis(2-chloroethoxy)methane	No Detections		0	308	0.00%
Bis(2-chloroethyl)ether	No Detections		0	308	0.00%
Bis(2-chloroisopropyl)ether	No Detections		0	308	0.00%
Bis(2-ethylhexyl)phthalate	7.90E+00	2.10E-03	254	308	82.47%
Butyl benzyl phthalate	8.30E+00	2.20E-03	65	308	21.10%
Caprolactam	4.40E-02	2.10E-03	49	308	15.91%
Carbazole	3.80E+00	1.70E-03	96	308	31.17%
Chrysene	2.90E+01	1.70E-03	174	308	56.49%
Dibenz(a,h)anthracene	4.80E+00	2.50E-03	82	308	26.62%
Dibenzofuran	2.90E+00	1.20E-03	47	308	15.26%
Diethyl phthalate	3.80E-03	1.70E-03	3	308	0.97%
Dimethyl phthalate	2.40E-02	1.20E-03	13	308	4.22%
Di-n-butyl phthalate	6.10E-01	1.80E-03	56	308	18.18%
Di-n-octyl phthalate	1.40E-01	2.30E-03	54	308	17.53%
Fluoranthene	7.90E+01	1.70E-03	186	308	60.39%
Fluorene	3.90E+00	1.60E-03	65	308	21.10%
Hexachlorobenzene	9.60E-03	3.00E-03	5	308	1.62%
Hexachlorobutadiene	4.30E-02	2.50E-03	8	308	2.60%
Hexachlorocyclopentadiene	3.00E-03	2.40E-03	2	308	0.65%
Hexachloroethane	No Detections		0	308	0.00%
Indeno(1,2,3-cd)pyrene	1.90E+01	1.20E-03	141	308	45.78%
Isophorone	2.80E-01	3.20E-03	5	308	1.62%
Naphthalene	6.30E-01	1.00E-03	77	308	25.00%
Nitrobenzene	No Detections		0	308	0.00%
N-Nitrosodi-n-propylamine	No Detections		0	308	0.00%
N-Nitrosodiphenylamine	1.40E-01	3.30E-03	3	308	0.97%
Pentachlorophenol	1.80E-02	1.80E-02	1	308	0.32%
Phenanthrene	3.30E+01	2.10E-03	158	308	51.30%
Phenol	4.80E-01	1.70E-03	42	308	13.64%
Pyrene	5.30E+01	8.00E-04	191	308	62.01%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Semi-Volatile Organic Compounds - Groundwater

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	1.20E+01	2.50E-05	0	0
1,2,4,5-Tetrachlorobenzene	7.30E-03	4.00E-05	0	0
1,4-Dioxane	9.10E-04	5.90E-05	0	4
1-Methylnaphthalene*T	3.10E-03	1.00E-05	0	0
2,3,4,6-Tetrachlorophenol	7.30E-01	5.70E-05	0	0
2,4,5-Trichlorophenol	2.40E+00	5.90E-05	0	0
2,4,6-Trichlorophenol	2.40E-02	4.90E-05	0	0
2,4-Dichlorophenol	7.30E-02	4.40E-05	0	0
2,4-Dimethylphenol	4.90E-01	2.00E-03	0	0
2,4-Dinitrophenol	4.90E-02	1.00E-04	0	0
2,4-Dinitrotoluene	1.30E-04	6.00E-05	0	0
2,6-Dinitrotoluene	1.30E-04	4.30E-05	0	0
2-Chloronaphthalene	2.00E+00	2.20E-05	0	0
2-Chlorophenol	1.20E-01	3.70E-05	0	0
2-Methylnaphthalene*L,*T	9.80E-02	2.00E-05	0	0
2-Methylphenol	1.20E+00	4.60E-05	0	0
2-Nitroaniline	7.30E-03	4.20E-05	0	0
2-Nitrophenol	4.90E-02	3.50E-05	0	0
3,3´-Dichlorobenzidine	2.00E-04	4.50E-05	0	0
3-Methylphenol	1.20E+00	3.70E-05	0	0
3-Nitroaniline	7.30E-03	5.10E-05	0	0
4,6-Dinitro-2-methylphenol	2.40E-03	2.10E-05	0	0
4-Bromophenyl phenyl ether	6.10E-06	5.30E-05	13	0
4-Chloro-3-methylphenol	1.20E-01	3.30E-05	0	0
4-Chlorophenyl phenyl ether	6.10E-06	4.50E-05	13	0
4-Methylphenol	1.20E-01	3.70E-05	0	0
4-Nitroaniline	4.60E-03	3.60E-05	0	0
4-Nitrophenol	4.90E-02	4.80E-05	0	0
Acenaphthene*L,*T	1.50E+00	2.80E-05	0	0
Acenaphthylene*L,*T	1.50E+00	1.50E-05	0	0
Acetophenone	2.40E+00	2.40E-03	0	0
Anthracene*L,*T	7.30E+00	1.40E-05	0	0
Atrazine	3.00E-03	3.40E-05	0	0
Benz(a)anthracene*H,*T	9.10E-03	5.20E-05	0	0
Benzaldehyde	2.40E+00	3.10E-05	0	0
Benzo(a)pyrene*H,*T	2.00E-04	2.10E-05	0	0
Benzo(b)fluoranthene*T	9.10E-03	2.40E-05	0	0
Benzo(g,h,i)perylene*T	7.30E-01	1.40E-05	0	0
Benzo(k)fluoranthene*T	9.10E-02	2.00E-05	0	0
Bis(2-chloroethoxy)methane	8.30E-05	3.10E-05	0	0
Bis(2-chloroethyl)ether	8.30E-05	2.70E-05	0	0
Bis(2-chloroisopropyl)ether	1.30E-03	7.20E-05	0	0
Bis(2-ethylhexyl)phthalate	6.00E-03	3.80E-05	0	0
Butyl benzyl phthalate	4.80E-01	2.00E-05	0	0
Caprolactam	1.20E+01	4.60E-05	0	0
Carbazole	4.60E-03	2.60E-05	0	1
Chrysene*H,*T	9.10E-01	2.20E-05	0	0
Dibenz(a,h)anthracene*H,*T	2.00E-04	2.50E-05	0	0
Dibenzofuran	3.80E-02	2.10E-05	0	0
Diethyl phthalate	2.00E+01	3.10E-05	0	0
Dimethyl phthalate	2.00E+01	4.20E-05	0	0
Di-n-butyl phthalate	2.40E+00	2.10E-05	0	0
Di-n-octyl phthalate	2.40E-01	2.10E-05	0	0
Fluoranthene*H,*T	9.80E-01	1.00E-05	0	0
Fluorene*L,*T	9.80E-01	3.10E-05	0	0
Hexachlorobenzene	1.00E-03	4.50E-05	0	0
Hexachlorobutadiene	1.20E-03	3.10E-05	0	0
Hexachlorocyclopentadiene	5.00E-02	3.10E-05	0	0
Hexachloroethane	1.70E-02	6.10E-05	0	0
Indeno(1,2,3-cd)pyrene*T	9.10E-03	2.30E-05	0	0
Isophorone	9.60E-02	2.60E-05	0	0
Naphthalene*L,*T	4.90E-01	2.10E-05	0	0
Nitrobenzene	4.90E-02	2.50E-05	0	0
N-Nitrosodi-n-propylamine	1.30E-05	3.30E-05	13	0
N-Nitrosodiphenylamine	1.90E-02	2.60E-05	0	0
Pentachlorophenol	1.00E-03	8.10E-05	0	0
Phenanthrene*L,*T	7.30E-01	2.20E-05	0	0
Phenol	7.30E+00	3.60E-05	0	0
Pyrene*H,*T	7.30E-01	2.00E-05	0	0
High Molecular Weight PAHs	NA	No PSV		
Low Molecular Weight PAHs	NA	No PSV		
Total PAHs	NA	No PSV		

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	NA	2.50E-05	0	0
1,2,4,5-Tetrachlorobenzene	1.29E-01	4.00E-05	0	0
1,4-Dioxane	NA	5.90E-05	0	0
1-Methylnaphthalene*T	NA	1.00E-05	0	0
2,3,4,6-Tetrachlorophenol	4.40E-02	5.70E-05	0	0
2,4,5-Trichlorophenol	1.20E-02	5.90E-05	0	0
2,4,6-Trichlorophenol	6.10E-02	4.90E-05	0	0
2,4-Dichlorophenol	NA	4.40E-05	0	0
2,4-Dimethylphenol	NA	2.00E-03	0	0
2,4-Dinitrophenol	6.70E-01	1.00E-04	0	0
2,4-Dinitrotoluene	3.70E-01	6.00E-05	0	0
2,6-Dinitrotoluene	NA	4.30E-05	0	0
2-Chloronaphthalene	7.50E-03	2.20E-05	0	0
2-Chlorophenol	2.65E-01	3.70E-05	0	0
2-Methylnaphthalene*L,*T	3.00E-02	2.00E-05	0	0
2-Methylphenol	5.10E-01	4.60E-05	0	0
2-Nitroaniline	NA	4.20E-05	0	0
2-Nitrophenol	1.47E+00	3.50E-05	0	0
3,3´-Dichlorobenzidine	NA	4.50E-05	0	0
3-Methylphenol	3.70E-02	3.70E-05	0	0
3-Nitroaniline	NA	5.10E-05	0	0
4,6-Dinitro-2-methylphenol	NA	2.10E-05	0	0
4-Bromophenyl phenyl ether	NA	5.30E-05	0	0
4-Chloro-3-methylphenol	NA	3.30E-05	0	0
4-Chlorophenyl phenyl ether	NA	4.50E-05	0	0
4-Methylphenol	5.10E-01	3.70E-05	0	0
4-Nitroaniline	NA	3.60E-05	0	0
4-Nitrophenol	3.59E-01	4.80E-05	0	0
Acenaphthene*L,*T	4.04E-02	2.80E-05	0	0
Acenaphthylene*L,*T	NA	1.50E-05	0	0
Acetophenone	NA	2.40E-03	0	0
Anthracene*L,*T	1.80E-04	1.40E-05	0	0
Atrazine	NA	3.40E-05	0	0
Benz(a)anthracene*H,*T	NA	5.20E-05	0	0
Benzaldehyde	NA	3.10E-05	0	0
Benzo(a)pyrene*H,*T	NA	2.10E-05	0	0
Benzo(b)fluoranthene*T	NA	2.40E-05	0	0
Benzo(g,h,i)perylene*T	NA	1.40E-05	0	0
Benzo(k)fluoranthene*T	NA	2.00E-05	0	0
Bis(2-chloroethoxy)methane	6.40E+00	3.10E-05	0	0
Bis(2-chloroethyl)ether	NA	2.70E-05	0	0
Bis(2-chloroisopropyl)ether	NA	7.20E-05	0	0
Bis(2-ethylhexyl)phthalate	3.60E-01	3.80E-05	0	0
Butyl benzyl phthalate	1.47E-01	2.00E-05	0	0
Caprolactam	NA	4.60E-05	0	0
Carbazole	NA	2.60E-05	0	0
Chrysene*H,*T	NA	2.20E-05	0	0
Dibenz(a,h)anthracene*H,*T	NA	2.50E-05	0	0
Dibenzofuran	6.50E-02	2.10E-05	0	0
Diethyl phthalate	4.42E-01	3.10E-05	0	0
Dimethyl phthalate	5.80E-01	4.20E-05	0	0
Di-n-butyl phthalate	5.00E-03	2.10E-05	0	0
Di-n-octyl phthalate	3.40E-03	2.10E-05	0	0
Fluoranthene*H,*T	2.96E-03	1.00E-05	0	0
Fluorene*L,*T	5.00E-02	3.10E-05	0	0
Hexachlorobenzene	1.29E-01	4.50E-05	0	0
Hexachlorobutadiene	3.20E-04	3.10E-05	0	0
Hexachlorocyclopentadiene	7.00E-05	3.10E-05	0	0
Hexachloroethane	9.40E-03	6.10E-05	0	0
Indeno(1,2,3-cd)pyrene*T	NA	2.30E-05	0	0
Isophorone	6.50E-01	2.60E-05	0	0
Naphthalene*L,*T	1.25E-01	2.10E-05	0	0
Nitrobenzene	6.68E-02	2.50E-05	0	0
N-Nitrosodi-n-propylamine	1.20E-01	3.30E-05	0	0
N-Nitrosodiphenylamine	1.65E+02	2.60E-05	0	0
Pentachlorophenol	9.60E-03	8.10E-05	0	0
Phenanthrene*L,*T	4.60E-03	2.20E-05	0	0
Phenol	2.75E+00	3.60E-05	0	0
Pyrene*H,*T	2.40E-04	2.00E-05	0	0
High Molecular Weight PAHs	NA	No PSV		
Low Molecular Weight PAHs	NA	No PSV		
Total PAHs	NA	No PSV		

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1´-Biphenyl	1.30E-04	1.30E-04	1	16	6.25%
1,2,4,5-Tetrachlorobenzene	No Detections		0	16	0.00%
1,4-Dioxane	2.00E-02	1.20E-03	5	16	31.25%
1-Methylnaphthalene	3.30E-04	3.30E-04	1	16	6.25%
2,3,4,6-Tetrachlorophenol	8.90E-04	8.90E-04	1	16	6.25%
2,4,5-Trichlorophenol	5.60E-04	5.60E-04	1	16	6.25%
2,4,6-Trichlorophenol	9.10E-04	9.10E-04	1	16	6.25%
2,4-Dichlorophenol	1.70E-03	4.60E-04	2	16	12.50%
2,4-Dimethylphenol	1.30E-01	1.30E-01	1	16	6.25%
2,4-Dinitrophenol	No Detections		0	16	0.00%
2,4-Dinitrotoluene	No Detections		0	16	0.00%
2,6-Dinitrotoluene	No Detections		0	16	0.00%
2-Chloronaphthalene	No Detections		0	16	0.00%
2-Chlorophenol	3.00E-03	6.80E-05	3	16	18.75%
2-Methylnaphthalene	1.40E-04	1.40E-04	1	16	6.25%
2-Methylphenol	No Detections		0	16	0.00%
2-Nitroaniline	No Detections		0	16	0.00%
2-Nitrophenol	No Detections		0	16	0.00%
3,3´-Dichlorobenzidine	No Detections		0	16	0.00%
3-Methylphenol	3.70E-04	3.70E-04	1	16	6.25%
3-Nitroaniline	No Detections		0	16	0.00%
4,6-Dinitro-2-methylphenol	No Detections		0	16	0.00%
4-Bromophenyl phenyl ether	No Detections		0	16	0.00%
4-Chloro-3-methylphenol	No Detections		0	16	0.00%
4-Chlorophenyl phenyl ether	No Detections		0	16	0.00%
4-Methylphenol	3.70E-04	3.70E-04	1	16	6.25%
4-Nitroaniline	No Detections		0	16	0.00%
4-Nitrophenol	No Detections		0	16	0.00%
Acenaphthene	2.80E-05	2.80E-05	1	16	6.25%
Acenaphthylene	No Detections		0	16	0.00%
Acetophenone	6.40E-01	3.20E-05	3	16	18.75%
Anthracene	3.70E-05	3.70E-05	1	16	6.25%
Atrazine	No Detections		0	16	0.00%
Benz(a)anthracene	6.00E-05	6.00E-05	1	16	6.25%
Benzaldehyde	No Detections		0	16	0.00%
Benzo(a)pyrene	No Detections		0	16	0.00%
Benzo(b)fluoranthene	No Detections		0	16	0.00%
Benzo(g,h,i)perylene	No Detections		0	16	0.00%
Benzo(k)fluoranthene	No Detections		0	16	0.00%
Bis(2-chloroethoxy)methane	No Detections		0	16	0.00%
Bis(2-chloroethyl)ether	No Detections		0	16	0.00%
Bis(2-chloroisopropyl)ether	No Detections		0	16	0.00%
Bis(2-ethylhexyl)phthalate	3.30E-03	4.70E-05	4	16	25.00%
Butyl benzyl phthalate	No Detections		0	16	0.00%
Caprolactam	No Detections		0	16	0.00%
Carbazole	1.10E-02	1.20E-04	2	16	12.50%
Chrysene	6.20E-05	6.20E-05	1	16	6.25%
Dibenz(a,h)anthracene	No Detections		0	16	0.00%
Dibenzofuran	No Detections		0	16	0.00%
Diethyl phthalate	2.60E-04	7.10E-05	3	16	18.75%
Dimethyl phthalate	No Detections		0	16	0.00%
Di-n-butyl phthalate	6.10E-05	5.20E-05	2	16	12.50%
Di-n-octyl phthalate	No Detections		0	16	0.00%
Fluoranthene	1.50E-04	1.10E-05	2	16	12.50%
Fluorene	No Detections		0	16	0.00%
Hexachlorobenzene	No Detections		0	16	0.00%
Hexachlorobutadiene	2.00E-04	2.00E-04	1	16	6.25%
Hexachlorocyclopentadiene	No Detections		0	16	0.00%
Hexachloroethane	No Detections		0	16	0.00%
Indeno(1,2,3-cd)pyrene	No Detections		0	16	0.00%
Isophorone	No Detections		0	16	0.00%
Naphthalene	2.90E-03	2.40E-04	2	16	12.50%
Nitrobenzene	No Detections		0	16	0.00%
N-Nitrosodi-n-propylamine	No Detections		0	16	0.00%
N-Nitrosodiphenylamine	No Detections		0	16	0.00%
Pentachlorophenol	5.00E-04	3.30E-04	2	16	12.50%
Phenanthrene	9.40E-05	3.80E-05	2	16	12.50%
Phenol	5.20E-03	8.70E-05	3	16	18.75%
Pyrene	1.40E-04	1.10E-04	2	16	12.50%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Semi-Volatile Organic Compounds - Sediment[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	7.65E+03	9.50E-03	0	0
1,2,4,5-Tetrachlorobenzene	4.59E+01	5.60E-03	0	0
1,4-Dioxane	4.95E+02	1.20E-02	0	0
1-Methylnaphthalene*T	8.66E+03	8.40E-03	0	0
2,3,4,6-Tetrachlorophenol	4.59E+03	1.60E-02	0	0
2,4,5-Trichlorophenol	1.53E+04	1.40E-02	0	0
2,4,6-Trichlorophenol	1.29E+02	9.50E-03	0	0
2,4-Dichlorophenol	4.59E+02	7.30E-03	0	0
2,4-Dimethylphenol	3.06E+03	1.80E-02	0	0
2,4-Dinitrophenol	3.06E+02	2.50E-02	0	0
2,4-Dinitrotoluene	2.09E+00	5.00E-03	0	0
2,6-Dinitrotoluene	2.09E+00	1.80E-02	0	0
2-Chloronaphthalene	9.90E+03	7.30E-03	0	0
2-Chlorophenol	3.67E+03	7.30E-03	0	0
2-Methylnaphthalene*L,*T	4.95E+02	2.80E-03	0	0
2-Methylphenol	7.65E+03	6.20E-03	0	0
2-Nitroaniline	4.59E+01	1.10E-02	0	0
2-Nitrophenol	3.06E+02	1.40E-02	0	0
3,3´-Dichlorobenzidine	3.16E+00	1.40E-02	0	0
3-Methylphenol	7.65E+03	5.60E-03	0	0
3-Nitroaniline	4.59E+01	1.10E-02	0	0
4,6-Dinitro-2-methylphenol	3.06E+02	1.20E-02	0	0
4-Bromophenyl phenyl ether	9.47E-02	9.00E-03	0	0
4-Chloro-3-methylphenol	7.65E+02	3.90E-03	0	0
4-Chlorophenyl phenyl ether	9.47E-02	8.40E-03	0	0
4-Methylphenol	7.65E+02	5.60E-03	0	0
4-Nitroaniline	3.74E+01	1.20E-02	0	0
4-Nitrophenol	3.06E+02	1.10E-02	0	0
Acenaphthene*L,*T	7.42E+03	2.80E-03	0	0
Acenaphthylene*L,*T	7.42E+03	5.60E-03	0	0
Acetophenone	1.53E+04	4.50E-03	0	0
Anthracene*L,*T	3.71E+04	2.80E-03	0	0
Atrazine	6.40E+00	1.10E-02	0	0
Benz(a)anthracene*H,*T	1.59E+00	9.00E-02	0	1
Benzaldehyde	7.35E+04	6.70E-03	0	0
Benzo(a)pyrene*H,*T	1.59E-01	5.60E-02	0	2
Benzo(b)fluoranthene*T	1.59E+00	6.70E-02	0	1
Benzo(g,h,i)perylene*T	3.71E+03	3.90E-02	0	0
Benzo(k)fluoranthene*T	1.59E+01	5.00E-02	0	0
Bis(2-chloroethoxy)methane	1.29E+00	5.00E-03	0	0
Bis(2-chloroethyl)ether	4.95E+00	6.20E-03	0	0
Bis(2-chloroisopropyl)ether	2.03E+01	7.80E-03	0	0
Bis(2-ethylhexyl)phthalate	2.44E+01	9.50E-03	0	0
Butyl benzyl phthalate	3.06E+04	7.30E-03	0	0
Caprolactam	7.65E+04	6.70E-03	0	0
Carbazole	7.10E+01	6.70E-03	0	0
Chrysene*H,*T	1.59E+02	4.50E-02	0	0
Dibenz(a,h)anthracene*H,*T	1.59E-01	9.00E-03	0	1
Dibenzofuran	6.12E+02	3.90E-03	0	0
Diethyl phthalate	1.22E+05	5.60E-03	0	0
Dimethyl phthalate	1.22E+05	4.50E-03	0	0
Di-n-butyl phthalate	1.53E+04	6.70E-03	0	0
Di-n-octyl phthalate	3.06E+03	5.00E-03	0	0
Fluoranthene*H,*T	4.95E+03	6.20E-02	0	0
Fluorene*L,*T	4.95E+03	6.20E-03	0	0
Hexachlorobenzene	8.88E-01	5.00E-03	0	0
Hexachlorobutadiene	3.06E+01	6.70E-03	0	0
Hexachlorocyclopentadiene	9.19E+02	4.50E-03	0	0
Hexachloroethane	1.53E+02	8.40E-03	0	0
Indeno(1,2,3-cd)pyrene*T	1.59E+00	4.50E-02	0	1
Isophorone	1.50E+03	4.50E-03	0	0
Naphthalene*L,*T	2.47E+03	3.40E-03	0	0
Nitrobenzene	7.65E+01	5.00E-03	0	0
N-Nitrosodi-n-propylamine	6.31E-02	6.20E-03	0	0
N-Nitrosodiphenylamine	9.01E+01	3.90E-03	0	0
Pentachlorophenol	5.61E+00	1.80E-02	0	0
Phenanthrene*L,*T	3.71E+03	1.00E-02	0	0
Phenol	4.59E+04	6.20E-03	0	0
Pyrene*H,*T	3.71E+03	3.40E-02	0	0
High Molecular Weight PAHs	NA	No PSV		
Low Molecular Weight PAHs	NA	No PSV		
Total PAHs	NA	No PSV		

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	1.10E+00	9.50E-03	0	0
1,2,4,5-Tetrachlorobenzene	NA	5.60E-03	No PSV	
1,4-Dioxane	NA	1.20E-02	No PSV	
1-Methylnaphthalene*T	NA	8.40E-03	No PSV	
2,3,4,6-Tetrachlorophenol	NA	1.60E-02	No PSV	
2,4,5-Trichlorophenol	NA	1.40E-02	No PSV	
2,4,6-Trichlorophenol	NA	9.50E-03	No PSV	
2,4-Dichlorophenol	NA	7.30E-03	No PSV	
2,4-Dimethylphenol	NA	1.80E-02	No PSV	
2,4-Dinitrophenol	NA	2.50E-02	No PSV	
2,4-Dinitrotoluene	NA	5.00E-03	No PSV	
2,6-Dinitrotoluene	NA	1.80E-02	No PSV	
2-Chloronaphthalene	NA	7.30E-03	No PSV	
2-Chlorophenol	NA	7.30E-03	No PSV	
2-Methylnaphthalene*L,*T	2.00E-02	2.80E-03	0	2
2-Methylphenol	5.00E-01	6.20E-03	0	0
2-Nitroaniline	NA	1.10E-02	No PSV	
2-Nitrophenol	NA	1.40E-02	No PSV	
3,3´-Dichlorobenzidine	NA	1.40E-02	No PSV	
3-Methylphenol	5.00E-02	5.60E-03	0	0
3-Nitroaniline	NA	1.10E-02	No PSV	
4,6-Dinitro-2-methylphenol	NA	1.20E-02	No PSV	
4-Bromophenyl phenyl ether	1.30E+00	9.00E-03	0	0
4-Chloro-3-methylphenol	NA	3.90E-03	No PSV	
4-Chlorophenyl phenyl ether	NA	8.40E-03	No PSV	
4-Methylphenol	5.00E-02	5.60E-03	0	0
4-Nitroaniline	NA	1.20E-02	No PSV	
4-Nitrophenol	NA	1.10E-02	No PSV	
Acenaphthene*L,*T	6.71E-03	2.80E-03	0	2
Acenaphthylene*L,*T	5.87E-03	5.60E-03	0	1
Acetophenone	NA	4.50E-03	No PSV	
Anthracene*L,*T	5.72E-02	2.80E-03	0	2
Atrazine	NA	1.10E-02	No PSV	
Benz(a)anthracene*H,*T	1.08E-01	9.00E-02	0	2
Benzaldehyde	NA	6.70E-03	No PSV	
Benzo(a)pyrene*H,*T	1.50E-01	5.60E-02	0	2
Benzo(b)fluoranthene*T	NA	6.70E-02	No PSV	
Benzo(g,h,i)perylene*T	1.70E-01	3.90E-02	0	2
Benzo(k)fluoranthene*T	2.40E-01	5.00E-02	0	2
Bis(2-chloroethoxy)methane	NA	5.00E-03	No PSV	
Bis(2-chloroethyl)ether	NA	6.20E-03	No PSV	
Bis(2-chloroisopropyl)ether	NA	7.80E-03	No PSV	
Bis(2-ethylhexyl)phthalate	1.82E-01	9.50E-03	0	0
Butyl benzyl phthalate	1.10E+01	7.30E-03	0	0
Caprolactam	NA	6.70E-03	No PSV	
Carbazole	NA	6.70E-03	No PSV	
Chrysene*H,*T	1.66E-01	4.50E-02	0	2
Dibenz(a,h)anthracene*H,*T	3.30E-02	9.00E-03	0	2
Dibenzofuran	5.10E+00	3.90E-03	0	0
Diethyl phthalate	6.30E-01	5.60E-03	0	0
Dimethyl phthalate	NA	4.50E-03	No PSV	
Di-n-butyl phthalate	3.80E-01	6.70E-03	0	0
Di-n-octyl phthalate	NA	5.00E-03	No PSV	
Fluoranthene*H,*T	4.23E-01	6.20E-02	0	2
Fluorene*L,*T	7.74E-02	6.20E-03	0	0
Hexachlorobenzene	2.00E-02	5.00E-03	0	0
Hexachlorobutadiene	5.50E-02	6.70E-03	0	0
Hexachlorocyclopentadiene	NA	4.50E-03	No PSV	
Hexachloroethane	2.30E-01	8.40E-03	0	0
Indeno(1,2,3-cd)pyrene*T	2.00E-01	4.50E-02	0	2
Isophorone	NA	4.50E-03	No PSV	
Naphthalene*L,*T	1.76E-01	3.40E-03	0	0
Nitrobenzene	5.10E-01	5.00E-03	0	0
N-Nitrosodi-n-propylamine	NA	6.20E-03	No PSV	
N-Nitrosodiphenylamine	NA	3.90E-03	No PSV	
Pentachlorophenol	NA	1.80E-02	No PSV	
Phenanthrene*L,*T	2.04E-01	1.00E-02	0	2
Phenol	4.80E-02	6.20E-03	0	0
Pyrene*H,*T	1.95E-01	3.40E-02	0	2
High Molecular Weight PAHs	NA	No PSV		
Low Molecular Weight PAHs	NA	No PSV		
Total PAHs	1.61E+00	0.00E+00	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1´-Biphenyl	1.10E-02	1.10E-02	1	6	16.67%
1,2,4,5-Tetrachlorobenzene	No Detections		0	6	0.00%
1,4-Dioxane	No Detections		0	6	0.00%
1-Methylnaphthalene	4.10E-02	7.10E-03	2	6	33.33%
2,3,4,6-Tetrachlorophenol	No Detections		0	6	0.00%
2,4,5-Trichlorophenol	4.60E-03	4.60E-03	1	6	16.67%
2,4,6-Trichlorophenol	3.60E-03	3.60E-03	1	6	16.67%
2,4-Dichlorophenol	8.40E-03	8.40E-03	1	6	16.67%
2,4-Dimethylphenol	No Detections		0	6	0.00%
2,4-Dinitrophenol	No Detections		0	6	0.00%
2,4-Dinitrotoluene	No Detections		0	6	0.00%
2,6-Dinitrotoluene	No Detections		0	6	0.00%
2-Chloronaphthalene	No Detections		0	6	0.00%
2-Chlorophenol	No Detections		0	6	0.00%
2-Methylnaphthalene	1.00E-01	1.30E-03	4	6	66.67%
2-Methylphenol	No Detections		0	6	0.00%
2-Nitroaniline	No Detections		0	6	0.00%
2-Nitrophenol	No Detections		0	6	0.00%
3,3´-Dichlorobenzidine	No Detections		0	6	0.00%
3-Methylphenol	2.00E-02	2.20E-03	3	6	50.00%
3-Nitroaniline	No Detections		0	6	0.00%
4,6-Dinitro-2-methylphenol	No Detections		0	6	0.00%
4-Bromophenyl phenyl ether	No Detections		0	6	0.00%
4-Chloro-3-methylphenol	No Detections		0	6	0.00%
4-Chlorophenyl phenyl ether	No Detections		0	6	0.00%
4-Methylphenol	2.00E-02	2.20E-03	3	6	50.00%
4-Nitroaniline	No Detections		0	6	0.00%
4-Nitrophenol	No Detections		0	6	0.00%
Acenaphthene	6.50E-02	3.80E-02	2	6	33.33%
Acenaphthylene	8.00E-01	4.20E-03	3	6	50.00%
Acetophenone	1.90E-02	3.00E-03	2	6	33.33%
Anthracene	1.10E+00	4.20E-03	5	6	83.33%
Atrazine	No Detections		0	6	0.00%
Benz(a)anthracene	4.30E+00	1.60E-02	6	6	100.00%
Benzaldehyde	No Detections		0	6	0.00%
Benzo(a)pyrene	4.30E+00	1.50E-02	6	6	100.00%
Benzo(b)fluoranthene	7.60E+00	2.50E-02	6	6	100.00%
Benzo(g,h,i)perylene	2.80E+00	1.90E-02	6	6	100.00%
Benzo(k)fluoranthene	2.80E+00	1.10E-02	6	6	100.00%
Bis(2-chloroethoxy)methane	No Detections		0	6	0.00%
Bis(2-chloroethyl)ether	No Detections		0	6	0.00%
Bis(2-chloroisopropyl)ether	No Detections		0	6	0.00%
Bis(2-ethylhexyl)phthalate	8.20E-02	6.00E-03	6	6	100.00%
Butyl benzyl phthalate	2.40E-02	3.90E-03	4	6	66.67%
Caprolactam	4.30E-03	4.30E-03	1	6	16.67%
Carbazole	1.80E-01	8.50E-03	3	6	50.00%
Chrysene	4.80E+00	1.90E-02	6	6	100.00%
Dibenz(a,h)anthracene	8.30E-01	6.60E-03	6	6	100.00%
Dibenzofuran	3.30E-02	2.20E-03	3	6	50.00%
Diethyl phthalate	No Detections		0	6	0.00%
Dimethyl phthalate	3.80E-03	3.80E-03	1	6	16.67%
Di-n-butyl phthalate	1.80E-02	3.90E-03	3	6	50.00%
Di-n-octyl phthalate	3.60E-02	1.50E-02	2	6	33.33%
Fluoranthene	5.30E+00	1.50E-02	6	6	100.00%
Fluorene	7.60E-02	2.90E-03	3	6	50.00%
Hexachlorobenzene	No Detections		0	6	0.00%
Hexachlorobutadiene	No Detections		0	6	0.00%
Hexachlorocyclopentadiene	No Detections		0	6	0.00%
Hexachloroethane	No Detections		0	6	0.00%
Indeno(1,2,3-cd)pyrene	3.90E+00	2.60E-02	6	6	100.00%
Isophorone	No Detections		0	6	0.00%
Naphthalene	9.20E-02	2.70E-03	3	6	50.00%
Nitrobenzene	No Detections		0	6	0.00%
N-Nitrosodi-n-propylamine	No Detections		0	6	0.00%
N-Nitrosodiphenylamine	No Detections		0	6	0.00%
Pentachlorophenol	2.40E-02	2.00E-02	2	6	33.33%
Phenanthrene	5.20E-01	4.00E-03	5	6	83.33%
Phenol	8.80E-03	8.80E-03	1	6	16.67%
Pyrene	5.30E+00	1.40E-02	6	6	100.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Semi-Volatile Organic Compounds - Surface Water[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)[5]	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	NA	2.40E-05	No PSV	
1,2,4,5-Tetrachlorobenzene	7.10E-04	3.90E-05	0	0
1,4-Dioxane	NA	6.50E-05	No PSV	
1-Methylnaphthalene*T	NA	1.00E-05	No PSV	
2,3,4,6-Tetrachlorophenol	NA	5.50E-05	No PSV	
2,4,5-Trichlorophenol	2.44E+00	5.70E-05	0	0
2,4,6-Trichlorophenol	2.40E-02	4.80E-05	0	0
2,4-Dichlorophenol	2.90E-01	4.30E-05	0	0
2,4-Dimethylphenol	5.71E-01	4.00E-05	0	0
2,4-Dinitrophenol	5.30E+00	1.00E-04	0	0
2,4-Dinitrotoluene	3.40E-02	5.80E-05	0	0
2,6-Dinitrotoluene	NA	4.20E-05	No PSV	
2-Chloronaphthalene	1.60E+00	2.10E-05	0	0
2-Chlorophenol	1.50E-01	3.60E-05	0	0
2-Methylnaphthalene*L,*T	NA	1.90E-05	No PSV	
2-Methylphenol	9.30E+00	4.50E-05	0	0
2-Nitroaniline	NA	4.10E-05	No PSV	
2-Nitrophenol	NA	3.40E-05	No PSV	
3,3´-Dichlorobenzidine	4.40E-04	4.40E-05	0	0
3-Methylphenol	9.30E+00	3.60E-05	0	0
3-Nitroaniline	NA	4.90E-05	No PSV	
4,6-Dinitro-2-methylphenol	2.80E-01	2.00E-05	0	0
4-Bromophenyl phenyl ether	NA	5.10E-05	No PSV	
4-Chloro-3-methylphenol	NA	3.20E-05	No PSV	
4-Chlorophenyl phenyl ether	NA	4.40E-05	No PSV	
4-Methylphenol	9.30E+00	3.60E-05	0	0
4-Nitroaniline	NA	3.50E-05	No PSV	
4-Nitrophenol	NA	4.70E-05	No PSV	
Acenaphthene*L,*T	9.90E-01	2.70E-05	0	0
Acenaphthylene*L,*T	NA	1.50E-05	No PSV	
Acetophenone	NA	2.40E-05	No PSV	
Anthracene*L,*T	4.00E+01	1.40E-05	0	0
Atrazine	NA	3.30E-05	No PSV	
Benz(a)anthracene*H,*T	3.28E-03	5.00E-05	0	0
Benzaldehyde	NA	3.00E-05	No PSV	
Benzo(a)pyrene*H,*T	3.30E-04	2.00E-05	0	0
Benzo(b)fluoranthene*T	1.80E-04	2.30E-05	0	0
Benzo(g,h,i)perylene*T	NA	1.40E-05	No PSV	
Benzo(k)fluoranthene*T	1.80E-04	1.90E-05	0	0
Bis(2-chloroethoxy)methane	NA	3.00E-05	No PSV	
Bis(2-chloroethyl)ether	1.01E-02	2.60E-05	0	0
Bis(2-chloroisopropyl)ether	6.50E+01	7.00E-05	0	0
Bis(2-ethylhexyl)phthalate	4.10E-02	3.70E-05	0	0
Butyl benzyl phthalate	1.90E+00	1.90E-05	0	0
Caprolactam	NA	4.50E-05	No PSV	
Carbazole	NA	2.50E-05	No PSV	
Chrysene*H,*T	3.27E-01	2.10E-05	0	0
Dibenz(a,h)anthracene*H,*T	1.80E-04	2.40E-05	0	0
Dibenzofuran	NA	2.00E-05	No PSV	
Diethyl phthalate	4.40E+01	3.00E-05	0	0
Dimethyl phthalate	1.10E+03	4.10E-05	0	0
Di-n-butyl phthalate	3.01E+00	2.00E-05	0	0
Di-n-octyl phthalate	NA	2.00E-05	No PSV	
Fluoranthene*H,*T	1.40E-01	1.00E-05	0	0
Fluorene*L,*T	5.30E+00	3.00E-05	0	0
Hexachlorobenzene	4.50E-06	4.40E-05	2	0
Hexachlorobutadiene	2.74E-01	3.00E-05	0	0
Hexachlorocyclopentadiene	1.10E+00	3.00E-05	0	0
Hexachloroethane	1.15E-02	5.90E-05	0	0
Indeno(1,2,3-cd)pyrene*T	1.80E-04	2.20E-05	0	0
Isophorone	9.60E+00	2.50E-05	0	0
Naphthalene*L,*T	NA	2.00E-05	No PSV	
Nitrobenzene	1.85E+00	2.40E-05	0	0
N-Nitrosodi-n-propylamine	5.10E-03	3.20E-05	0	0
N-Nitrosodiphenylamine	6.00E-02	2.50E-05	0	0
Pentachlorophenol	9.10E-03	7.90E-05	0	0
Phenanthrene*L,*T	NA	2.10E-05	No PSV	
Phenol	8.60E+02	3.50E-05	0	0
Pyrene*H,*T	4.00E+00	1.90E-05	0	0
High Molecular Weight PAHs	NA	No PSV		
Low Molecular Weight PAHs	0.00E+00	0.00E+00	0	0
Total PAHs	0.00E+00	0.00E+00	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1´-Biphenyl	NA	2.40E-05	No PSV	
1,2,4,5-Tetrachlorobenzene	2.50E-03	3.90E-05	0	0
1,4-Dioxane	NA	6.50E-05	No PSV	
1-Methylnaphthalene*T	NA	1.00E-05	No PSV	
2,3,4,6-Tetrachlorophenol	NA	5.50E-05	No PSV	
2,4,5-Trichlorophenol	1.36E-01	5.70E-05	0	0
2,4,6-Trichlorophenol	8.10E-02	4.80E-05	0	0
2,4-Dichlorophenol	5.10E-01	4.30E-05	0	0
2,4-Dimethylphenol	6.30E-01	4.00E-05	0	0
2,4-Dinitrophenol	1.86E-01	1.00E-04	0	0
2,4-Dinitrotoluene	7.29E+00	5.80E-05	0	0
2,6-Dinitrotoluene	NA	4.20E-05	No PSV	
2-Chloronaphthalene	3.23E-01	2.10E-05	0	0
2-Chlorophenol	7.80E-01	3.60E-05	0	0
2-Methylnaphthalene*L,*T	3.80E-01	1.90E-05	0	0
2-Methylphenol	3.36E+00	4.50E-05	0	0
2-Nitroaniline	NA	4.10E-05	No PSV	
2-Nitrophenol	5.75E+00	3.40E-05	0	0
3,3´-Dichlorobenzidine	3.15E-01	4.40E-05	0	0
3-Methylphenol	2.30E-01	3.60E-05	0	0
3-Nitroaniline	NA	4.90E-05	No PSV	
4,6-Dinitro-2-methylphenol	6.90E-02	2.00E-05	0	0
4-Bromophenyl phenyl ether	NA	5.10E-05	No PSV	
4-Chloro-3-methylphenol	NA	3.20E-05	No PSV	
4-Chlorophenyl phenyl ether	NA	4.40E-05	No PSV	
4-Methylphenol	1.63E+00	3.60E-05	0	0
4-Nitroaniline	NA	3.50E-05	No PSV	
4-Nitrophenol	3.19E+00	4.70E-05	0	0
Acenaphthene*L,*T	1.70E+00	2.70E-05	0	0
Acenaphthylene*L,*T	NA	1.50E-05	No PSV	
Acetophenone	NA	2.40E-05	No PSV	
Anthracene*L,*T	1.80E-03	1.40E-05	0	0
Atrazine	NA	3.30E-05	No PSV	
Benz(a)anthracene*H,*T	2.08E-01	5.00E-05	0	0
Benzaldehyde	NA	3.00E-05	No PSV	
Benzo(a)pyrene*H,*T	2.40E-04	2.00E-05	0	0
Benzo(b)fluoranthene*T	NA	2.30E-05	No PSV	
Benzo(g,h,i)perylene*T	NA	1.40E-05	No PSV	
Benzo(k)fluoranthene*T	NA	1.90E-05	No PSV	
Bis(2-chloroethoxy)methane	1.10E+01	3.00E-05	0	0
Bis(2-chloroethyl)ether	7.20E+01	2.60E-05	0	0
Bis(2-chloroisopropyl)ether	3.78E+01	7.00E-05	0	0
Bis(2-ethylhexyl)phthalate	4.00E-01	3.70E-05	0	0
Butyl benzyl phthalate	5.60E-01	1.90E-05	0	0
Caprolactam	NA	4.50E-05	No PSV	
Carbazole	NA	2.50E-05	No PSV	
Chrysene*H,*T	2.07E-01	2.10E-05	0	0
Dibenz(a,h)anthracene*H,*T	1.49E-01	2.40E-05	0	0
Dibenzofuran	5.62E-01	2.00E-05	0	0
Diethyl phthalate	6.26E+00	3.00E-05	0	0
Dimethyl phthalate	9.40E-01	4.10E-05	0	0
Di-n-butyl phthalate	2.21E-01	2.00E-05	0	0
Di-n-octyl phthalate	6.71E-01	2.00E-05	0	0
Fluoranthene*H,*T	4.00E+00	1.00E-05	0	0
Fluorene*L,*T	6.40E-02	3.00E-05	0	0
Hexachlorobenzene	6.00E-03	4.40E-05	0	0
Hexachlorobutadiene	9.00E-02	3.00E-05	0	0
Hexachlorocyclopentadiene	2.10E-03	3.00E-05	0	0
Hexachloroethane	2.10E-01	5.90E-05	0	0
Indeno(1,2,3-cd)pyrene*T	NA	2.20E-05	No PSV	
Isophorone	3.60E+01	2.50E-05	0	0
Naphthalene*L,*T	1.48E+00	2.00E-05	0	0
Nitrobenzene	2.70E+02	2.40E-05	0	0
N-Nitrosodi-n-propylamine	3.80E+00	3.20E-05	0	0
N-Nitrosodiphenylamine	1.74E+00	2.50E-05	0	0
Pentachlorophenol	3.19E-03	7.90E-05	0	0
Phenanthrene*L,*T	3.00E-02	2.10E-05	0	0
Phenol	1.00E+01	3.50E-05	0	0
Pyrene*H,*T	2.06E-01	1.90E-05	0	0
High Molecular Weight PAHs	NA	No PSV		
Low Molecular Weight PAHs	2.90E+01	0.00E+00	0	0
Total PAHs	NA	No PSV		

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1´-Biphenyl	No Detections		0	2	0.00%
1,2,4,5-Tetrachlorobenzene	No Detections		0	2	0.00%
1,4-Dioxane	No Detections		0	2	0.00%
1-Methylnaphthalene	5.40E-05	5.40E-05	1	2	50.00%
2,3,4,6-Tetrachlorophenol	No Detections		0	2	0.00%
2,4,5-Trichlorophenol	No Detections		0	2	0.00%
2,4,6-Trichlorophenol	No Detections		0	2	0.00%
2,4-Dichlorophenol	No Detections		0	2	0.00%
2,4-Dimethylphenol	No Detections		0	2	0.00%
2,4-Dinitrophenol	No Detections		0	2	0.00%
2,4-Dinitrotoluene	No Detections		0	2	0.00%
2,6-Dinitrotoluene	No Detections		0	2	0.00%
2-Chloronaphthalene	No Detections		0	2	0.00%
2-Chlorophenol	No Detections		0	2	0.00%
2-Methylnaphthalene	No Detections		0	2	0.00%
2-Methylphenol	No Detections		0	2	0.00%
2-Nitroaniline	No Detections		0	2	0.00%
2-Nitrophenol	No Detections		0	2	0.00%
3,3´-Dichlorobenzidine	No Detections		0	2	0.00%
3-Methylphenol	No Detections		0	2	0.00%
3-Nitroaniline	No Detections		0	2	0.00%
4,6-Dinitro-2-methylphenol	No Detections		0	2	0.00%
4-Bromophenyl phenyl ether	No Detections		0	2	0.00%
4-Chloro-3-methylphenol	No Detections		0	2	0.00%
4-Chlorophenyl phenyl ether	No Detections		0	2	0.00%
4-Methylphenol	No Detections		0	2	0.00%
4-Nitroaniline	No Detections		0	2	0.00%
4-Nitrophenol	No Detections		0	2	0.00%
Acenaphthene	No Detections		0	2	0.00%
Acenaphthylene	No Detections		0	2	0.00%
Acetophenone	No Detections		0	2	0.00%
Anthracene	2.50E-04	9.50E-05	2	2	100.00%
Atrazine	No Detections		0	2	0.00%
Benz(a)anthracene	No Detections		0	2	0.00%
Benzaldehyde	No Detections		0	2	0.00%
Benzo(a)pyrene	No Detections		0	2	0.00%
Benzo(b)fluoranthene	No Detections		0	2	0.00%
Benzo(g,h,i)perylene	No Detections		0	2	0.00%
Benzo(k)fluoranthene	No Detections		0	2	0.00%
Bis(2-chloroethoxy)methane	No Detections		0	2	0.00%
Bis(2-chloroethyl)ether	No Detections		0	2	0.00%
Bis(2-chloroisopropyl)ether	No Detections		0	2	0.00%
Bis(2-ethylhexyl)phthalate	No Detections		0	2	0.00%
Butyl benzyl phthalate	No Detections		0	2	0.00%
Caprolactam	No Detections		0	2	0.00%
Carbazole	4.40E-04	1.80E-04	2	2	100.00%
Chrysene	No Detections		0	2	0.00%
Dibenz(a,h)anthracene	No Detections		0	2	0.00%
Dibenzofuran	No Detections		0	2	0.00%
Diethyl phthalate	No Detections		0	2	0.00%
Dimethyl phthalate	No Detections		0	2	0.00%
Di-n-butyl phthalate	No Detections		0	2	0.00%
Di-n-octyl phthalate	No Detections		0	2	0.00%
Fluoranthene	No Detections		0	2	0.00%
Fluorene	No Detections		0	2	0.00%
Hexachlorobenzene	No Detections		0	2	0.00%
Hexachlorobutadiene	No Detections		0	2	0.00%
Hexachlorocyclopentadiene	No Detections		0	2	0.00%
Hexachloroethane	No Detections		0	2	0.00%
Indeno(1,2,3-cd)pyrene	No Detections		0	2	0.00%
Isophorone	No Detections		0	2	0.00%
Naphthalene	3.80E-04	1.60E-04	2	2	100.00%
Nitrobenzene	No Detections		0	2	0.00%
N-Nitrosodi-n-propylamine	No Detections		0	2	0.00%
N-Nitrosodiphenylamine	No Detections		0	2	0.00%
Pentachlorophenol	No Detections		0	2	0.00%
Phenanthrene	5.90E-05	5.90E-05	1	2	50.00%
Phenol	No Detections		0	2	0.00%
Pyrene	No Detections		0	2	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Semi-Volatile Organic Compounds - Notes

1. PSV - Preliminary Screening Value
2. mg/kg - milligrams per kilogram
3. SQL - Sample Quantitation Limit
4. Ecological soil samples only include surface soil depths of 0.0-0.5 feet below ground surface.
5. mg/L - milligrams per liter
6. HH Soil Preliminary Screening Values represent highest value between the lower of TCEQ PCL vs. EPA RSL and Background UTL
   (1) TRRP Tier I Residential Protective Concentration Level (PCL), $^{Tot}Soil_{Comb}$, 30-acre Source Area (30 TAC 350.51(m)); Texas Risk Reduction Program, March 31, 2017. Screening levels for carcinogens adjusted to 10-6 risk.
   (2) Regional Screening Levels, http://www.epa.gov/reg3hwmd/risk/human/rb- concentration_table/Generic_Tables/index.htm, November 2017.
   (3) Regional Screening Levels, Lower of Risk-Based or MCL-Based SSL http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017.
   (4) Background UTLs from "Site-Specific Background Soil Concentration Calculations, US Oil Recovery Superfund Site" memo, Pastor, Behling & Wheeler, LLC. 2017
7. ECO Soil Preliminary Screening Values represent highest value between the lower of TCEQ Soil Benchmark vs. EPA Region V and Background UTLs
   (1) TCEQ Soil Benchmarks. August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
   (2) EPA Region V Mammals or Plants, USEPA, 2003
   (3) Background UTLs from "Site-Specific Background Soil Concentration Calculations" memo
8. HH Sediments Preliminary Screening Values represent lowest values from
   $^{Tot}Sed_{Comb}$, Protective Concentration Level; Texas Risk Reduction Program, March 31, 2006. Screening levels for carcinogens adjusted to 10-6 risk.
9. ECO Sediments Preliminary Screening Values represent values from
   Sediment Benchmarks, August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
10. HH Surface Water Preliminary Screening Values represent values from
    Human Health Risk-Based Exposure Limits (Fish only). May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
11. ECO Surface Water Preliminary Screening Values represent lowest Freshwater Acute Values from
    (1) Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
    (2) Screening Quick Reference Table for Organics in Water, NOAA 2008.
12. HH Groundwater Preliminary Screening Values represent lowest values from
    (1) Protective Concentration Level; Texas Risk Reduction Program, March 31, 2017. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. Screening levels for carcinogens adjusted to 10-6 risk.
    (2) Regional Screening Levels, Lower of Tapwater or Maximum Contaminant Level, http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017 .
13. ECO Groundwater Preliminary Screening Values represent lowest values from
    (1) Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
    (2) Screening Quick Reference Table for Organics in Water, NOAA 2008.
14. On-property surface water and sediment sample data were also evaluated, but the compounds detected in these media were essentially the same as those compounds detected in on-property soil and groundwater samples. As such, those media were considered in the process after the soil and groundwater data were evaluated to ensure that a compound detected in on-property surface water and sediment was not inadvertently overlooked. Since evaluating those media was not a formal step in the COPC selection process, the applicable rows are not highlighted on this table.
15. Shading colors correspond with shading in Table 2 and identifies the Step that the COPC was eliminated or retained:
    Green shading indicates COPC was eliminated because it was not detected above SQL in soil or groundwater.
    Yellow shading indicates COPC was eliminated because it was not detected above the PSV.
    Pink shading indicates COPC was eliminated because maximum concentration was less than 2 times PSV.
    Orange shading indicates COPC was eliminated because concentrations in perimeter samples were less than PSV.
    Blue shading indicates COPC was retained as a COPC in iteration 2 sampling.

*H - this PAH is considered to be of high-molecular weight and is added to the High Molecular Weight PAH category and summed accordingly.
*L - this PAH is considered to be of low-molecular weight and is added to the Low Molecular Weight PAH category and summed accordingly.
*T - all PAHs are summed to determine the total PAH concentration for use in the ecological risk assessment.

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Volatile Organic Compounds - Soils

Human Health PSV[1] Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)[2]	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL[3] exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	2.00E+00	1.20E-03	0	0
1,1,1-Trichloroethane	8.10E+03	9.70E-04	0	0
1,1,2,2-Tetrachloroethane	6.00E-01	1.60E-03	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	1.00E+00	1.40E-03	0	0
1,1,2-Trichloroethane	6.70E+03	9.70E-04	0	0
1,1-Dichloroethane	3.60E+00	9.70E-04	0	0
1,1-Dichloroethene	2.30E+03	9.70E-04	0	0
1,2,3-Trichlorobenzene	6.30E+01	1.40E-01	0	0
1,2,4-Trichlorobenzene	2.40E+02	1.40E+00	0	0
1,2,4-Trimethylbenzene	3.00E+02	1.40E-01	0	0
1,2-Dibromoethane	4.30E-02	9.70E-04	0	0
1,2-Dichlorobenzene	3.90E+02	1.40E+00	0	0
1,2-Dichloroethane	4.60E-01	1.20E-03	0	0
1,2-Dichloropropane	2.80E-01	1.60E-03	0	0
1,3,5-Trimethylbenzene	2.70E+02	5.00E-02	0	0
1,3-Dichlorobenzene	6.20E+01	1.40E-01	0	0
1,4-Dichlorobenzene	2.60E+00	1.40E+00	0	10
2-Butanone (MEK)	2.70E+04	2.50E-03	0	0
2-Hexanone	2.00E+02	2.70E-03	0	0
4-Methyl-2-pentanone	5.40E+03	3.90E-03	0	0
Acetone	5.90E+04	5.20E-03	0	0
Benzene	1.20E+00	7.20E-02	0	1
Bromodichloromethane	2.90E-01	9.70E-04	0	0
Bromoform	1.90E+02	1.20E-03	0	0
Bromomethane	6.80E+00	1.90E-03	0	0
Carbon disulfide	7.70E+02	1.20E-03	0	0
Carbon tetrachloride	6.50E-01	1.20E-03	0	0
Chlorobenzene	2.80E+02	8.70E-01	0	0
Chloroethane	1.40E+04	1.60E-03	0	0
Chloroform	3.20E-01	9.70E-04	0	0
Chloromethane	8.40E+00	9.70E-04	0	0
cis-1,2-Dichloroethene	1.20E+02	1.60E-03	0	0
cis-1,3-Dichloropropene	1.80E+00	9.70E-04	0	0
Cyclohexane	6.50E+03	1.90E-03	0	0
Dibromochloromethane	7.20E+00	9.70E-04	0	0
Dichlorodifluoromethane	8.70E+01	1.40E-03	0	0
Ethylbenzene	5.80E+00	3.60E+00	0	2
Isopropylbenzene (Cumene)	1.90E+03	6.00E-02	0	0
Methyl acetate	7.80E+04	1.40E-03	0	0
Methyl tert-butyl ether	4.70E+01	9.70E-04	0	0
Methylcyclohexane	2.20E+04	2.00E-03	0	0
Methylene chloride	5.70E+01	1.90E-03	0	0
n-Butylbenzene	3.30E+03	1.20E-03	0	0
n-Propylbenzene	1.60E+03	6.00E-02	0	0
sec-Butylbenzene	3.30E+03	6.20E-02	0	0
Styrene	4.30E+03	1.40E-03	0	0
tert-Butylbenzene	3.30E+03	1.90E-03	0	0
Tetrachloroethene	2.40E+01	1.40E-03	0	0
Toluene	4.90E+03	1.20E-03	0	0
trans-1,2-Dichloroethene	3.70E+02	9.70E-04	0	0
trans-1,3-Dichloropropene	1.80E+00	1.20E-03	0	0
Trichloroethene	9.40E-01	1.20E-03	0	0
Trichlorofluoromethane	2.30E+04	9.70E-04	0	0
Vinyl chloride	5.90E-02	1.60E-03	0	0
Xylenes, total	5.80E+02	1.20E+01	0	2

Ecological[4] PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	2.25E+02	1.20E-03	0	0
1,1,1-Trichloroethane	2.98E+01	9.70E-04	0	0
1,1,2,2-Tetrachloroethane	1.27E-01	1.60E-03	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	NA	1.40E-03	No PSV	
1,1,2-Trichloroethane	2.96E+01	9.70E-04	0	0
1,1-Dichloroethane	2.01E+01	9.70E-04	0	0
1,1-Dichloroethene	8.28E+00	9.70E-04	0	0
1,2,3-Trichlorobenzene	2.00E+01	1.40E-01	0	0
1,2,4-Trichlorobenzene	2.00E+01	1.40E+00	0	0
1,2,4-Trimethylbenzene	NA	1.40E-01	No PSV	
1,2-Dibromoethane	1.23E+00	9.70E-04	0	0
1,2-Dichlorobenzene	2.96E+00	1.40E+00	0	0
1,2-Dichloroethane	2.12E+01	1.20E-03	0	0
1,2-Dichloropropane	7.00E+02	1.60E-03	0	0
1,3,5-Trimethylbenzene	2.55E-01	5.00E-02	0	0
1,3-Dichlorobenzene	3.77E+01	1.40E-01	0	0
1,4-Dichlorobenzene	2.00E+01	1.40E+00	0	0
2-Butanone	8.96E+01	2.50E-03	0	0
2-Hexanone	1.26E+01	2.70E-03	0	0
4-Methyl-2-pentanone	NA	3.90E-03	No PSV	
Acetone	2.50E+00	5.20E-03	0	0
Benzene	2.55E-01	7.20E-02	0	0
Bromodichloromethane	5.40E-01	9.70E-04	0	0
Bromoform	1.59E+01	1.20E-03	0	0
Bromomethane	2.35E-01	1.90E-03	0	0
Carbon disulfide	9.41E-02	1.20E-03	0	0
Carbon tetrachloride	2.98E+00	1.20E-03	0	0
Chlorobenzene	4.00E+01	8.70E-01	0	0
Chloroethane	NA	1.60E-03	No PSV	
Chloroform	1.19E+00	9.70E-04	0	0
Chloromethane	1.04E+01	9.70E-04	0	0
cis-1,2-Dichloroethene	NA	1.60E-03	No PSV	
cis-1,3-Dichloropropene	3.98E-01	9.70E-04	0	0
Cyclohexane	NA	1.90E-03	0	0
Dibromochloromethane	2.05E+00	9.70E-04	0	0
Dichlorodifluoromethane	3.95E+01	1.40E-03	0	0
Ethylbenzene	5.16E+00	3.60E+00	0	0
Isopropylbenzene	NA	6.00E-02	No PSV	
Methyl acetate	NA	1.40E-03	No PSV	
Methyl tert-butyl ether	NA	9.70E-04	No PSV	
Methylcyclohexane	NA	2.00E-03	No PSV	
Methylene chloride	4.05E+00	1.90E-03	0	0
n-Butylbenzene	NA	1.20E-03	No PSV	
n-Propylbenzene	NA	6.00E-02	No PSV	
sec-Butylbenzene	NA	6.20E-02	No PSV	
Styrene	3.00E+02	1.40E-03	0	0
tert-Butylbenzene	NA	1.90E-03	No PSV	
Tetrachloroethene	9.92E+00	1.40E-03	0	0
Toluene	2.00E+02	1.20E-03	0	0
trans-1,2-Dichloroethene	7.84E-01	9.70E-04	0	0
trans-1,3-Dichloropropene	3.98E-01	1.20E-03	0	0
Trichloroethene	1.24E+01	1.20E-03	0	0
Trichlorofluoromethane	1.64E+01	9.70E-04	0	0
Vinyl chloride	6.46E-01	1.60E-03	0	0
Xylenes, Total	1.00E+01	1.20E+01	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1,1,2-Tetrachloroethane	No Detections		0	308	0.00%
1,1,1-Trichloroethane	No Detections		0	308	0.00%
1,1,2,2-Tetrachloroethane	No Detections		0	308	0.00%
1,1,2-Trichlor-1,2,2-trifluoroethane	No Detections		0	308	0.00%
1,1,2-Trichloroethane	No Detections		0	308	0.00%
1,1-Dichloroethane	No Detections		0	308	0.00%
1,1-Dichloroethene	No Detections		0	308	0.00%
1,2,3-Trichlorobenzene	1.50E+01	7.50E-03	12	308	3.90%
1,2,4-Trichlorobenzene	1.40E+02	3.70E-03	38	309	12.30%
1,2,4-Trimethylbenzene	5.30E+00	1.90E-03	28	308	9.09%
1,2-Dibromoethane	No Detections		0	308	0.00%
1,2-Dichlorobenzene	1.40E+02	1.30E-03	40	308	12.99%
1,2-Dichloroethane	No Detections		0	308	0.00%
1,2-Dichloropropane	No Detections		0	308	0.00%
1,3,5-Trimethylbenzene	9.20E+00	1.40E-03	20	308	6.49%
1,3-Dichlorobenzene	5.70E+00	1.70E-03	34	308	11.04%
1,4-Dichlorobenzene	2.30E+02	2.80E-03	53	311	17.04%
2-Butanone	8.80E-02	2.40E-02	5	308	1.62%
2-Hexanone	No Detections		0	308	0.00%
4-Methyl-2-pentanone	No Detections		0	308	0.00%
Acetone	3.00E-01	4.10E-02	20	308	6.49%
Benzene	5.60E+00	6.90E-04	32	308	10.39%
Bromodichloromethane	No Detections		0	308	0.00%
Bromoform	No Detections		0	308	0.00%
Bromomethane	No Detections		0	308	0.00%
Carbon disulfide	1.60E-01	2.90E-03	5	308	1.62%
Carbon tetrachloride	No Detections		0	308	0.00%
Chlorobenzene	9.60E+01	2.40E-03	44	308	14.29%
Chloroethane	No Detections		0	308	0.00%
Chloroform	2.20E-02	2.00E-02	2	308	0.65%
Chloromethane	No Detections		0	308	0.00%
cis-1,2-Dichloroethene	No Detections		0	308	0.00%
cis-1,3-Dichloropropene	No Detections		0	308	0.00%
Cyclohexane	1.10E-02	1.10E-02	1	308	0.32%
Dibromochloromethane	No Detections		0	308	0.00%
Dichlorodifluoromethane	No Detections		0	308	0.00%
Ethylbenzene	9.00E+01	1.40E-03	29	308	9.42%
Isopropylbenzene	1.80E+00	2.50E-03	20	308	6.49%
Methyl acetate	1.70E-01	2.90E-02	3	308	0.97%
Methyl tert-butyl ether	1.00E-02	1.00E-02	1	308	0.32%
Methylcyclohexane	3.30E-02	1.90E-02	2	308	0.65%
Methylene chloride	2.10E-03	2.10E-03	1	308	0.32%
n-Butylbenzene	7.50E-02	5.60E-03	6	308	1.95%
n-Propylbenzene	5.60E+00	1.90E-03	25	308	8.12%
sec-Butylbenzene	8.40E-01	4.20E-03	12	308	3.90%
Styrene	2.20E-01	4.10E-03	3	308	0.97%
tert-Butylbenzene	1.50E-02	3.10E-03	2	308	0.65%
Tetrachloroethene	2.80E-02	7.30E-03	3	308	0.97%
Toluene	2.30E-01	7.40E-04	24	308	7.79%
trans-1,2-Dichloroethene	No Detections		0	308	0.00%
trans-1,3-Dichloropropene	No Detections		0	308	0.00%
Trichloroethene	No Detections		0	308	0.00%
Trichlorofluoromethane	No Detections		0	308	0.00%
Vinyl chloride	No Detections		0	308	0.00%
Xylenes, Total	7.80E+02	3.40E-03	28	308	9.09%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Volatile Organic Compounds - Groundwater

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	3.50E-03	1.50E-02	0	0
1,1,1-Trichloroethane	2.00E-01	1.00E-02	0	0
1,1,2,2-Tetrachloroethane	4.60E-04	2.50E-02	13	0
1,1,2-Trichlor-1,2,2-trifluoroethane	7.30E+02	5.00E-02	0	0
1,1,2-Trichloroethane	5.00E-03	1.50E-02	0	0
1,1-Dichloroethane	4.90E+00	1.00E-02	0	0
1,1-Dichloroethene	7.00E-03	1.00E-02	0	0
1,2,3-Trichlorobenzene	7.30E-02	2.00E-02	0	0
1,2,4-Trichlorobenzene	7.00E-02	2.50E-02	0	0
1,2,4-Trimethylbenzene	8.30E-01	1.50E-02	0	0
1,2-Dibromoethane	5.00E-05	1.00E-02	13	0
1,2-Dichlorobenzene	6.00E-01	2.50E-02	0	0
1,2-Dichloroethane	5.00E-03	1.00E-02	0	2
1,2-Dichloropropane	5.00E-03	2.50E-02	0	0
1,3,5-Trimethylbenzene	8.30E-01	1.50E-02	0	0
1,3-Dichlorobenzene	7.30E-01	2.00E-02	0	0
1,4-Dichlorobenzene	7.50E-02	4.00E-02	0	1
2-Butanone (MEK)	1.50E+01	2.50E-02	0	0
2-Hexanone	1.20E-01	5.00E-02	0	0
4-Methyl-2-pentanone	2.00E+00	3.50E-02	0	0
Acetone	2.20E+01	1.00E-01	0	0
Benzene	5.00E-03	1.00E-02	0	2
Bromodichloromethane	1.50E-03	1.00E-02	0	0
Bromoform	1.20E-02	2.00E-02	0	0
Bromomethane	3.40E-02	2.00E-02	0	0
Carbon disulfide	2.40E+00	3.00E-02	0	0
Carbon tetrachloride	5.00E-03	2.50E-02	0	0
Chlorobenzene	1.00E-01	3.00E-02	0	2
Chloroethane	9.80E+00	1.50E-02	0	0
Chloroform	8.00E-02	1.00E-02	0	0
Chloromethane	7.00E-03	1.00E-02	0	0
cis-1,2-Dichloroethene	7.00E-02	1.00E-02	0	0
cis-1,3-Dichloropropene	1.70E-04	5.00E-03	0	0
Cyclohexane	1.20E+02	1.50E-02	0	0
Dibromochloromethane	1.10E-03	1.50E-02	0	0
Dichlorodifluoromethane	4.90E+00	1.50E-02	0	0
Ethylbenzene	7.00E-01	1.50E-02	0	1
Isopropylbenzene (Cumene)	2.40E+00	1.50E-02	0	0
Methyl acetate	2.40E+01	5.00E-02	0	0
Methyl tert-butyl ether	2.40E-01	1.00E-02	0	0
Methylcyclohexane	1.20E+02	1.50E-02	0	0
Methylene chloride	5.00E-03	5.00E-02	0	0
n-Butylbenzene	1.20E+00	2.00E-02	0	0
n-Propylbenzene	9.80E-01	1.50E-02	0	0
sec-Butylbenzene	9.80E-01	1.50E-02	0	0
Styrene	1.00E-01	1.50E-02	0	0
tert-Butylbenzene	9.80E-01	1.50E-02	0	0
Tetrachloroethene	5.00E-03	1.50E-02	0	0
Toluene	1.00E+00	1.00E-02	0	0
trans-1,2-Dichloroethene	1.00E-01	1.00E-02	0	0
trans-1,3-Dichloropropene	9.10E-04	1.00E-02	0	0
Trichloroethene	5.00E-03	1.00E-02	0	0
Trichlorofluoromethane	7.30E+00	1.50E-02	0	0
Vinyl chloride	2.00E-03	1.00E-02	0	0
Xylenes, total	1.00E+01	1.50E-01	0	1

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	NA	1.50E-02	0	0
1,1,1-Trichloroethane	1.56E+00	1.00E-02	0	0
1,1,2,2-Tetrachloroethane	4.51E-01	2.50E-02	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	NA	5.00E-02	0	0
1,1,2-Trichloroethane	2.75E-01	1.50E-02	0	0
1,1-Dichloroethane	NA	1.00E-02	0	0
1,1-Dichloroethene	1.25E+01	1.00E-02	0	0
1,2,3-Trichlorobenzene	NA	2.00E-02	0	0
1,2,4-Trichlorobenzene	2.25E-02	2.50E-02	0	1
1,2,4-Trimethylbenzene	2.17E-01	1.50E-02	0	0
1,2-Dibromoethane	NA	1.00E-02	0	0
1,2-Dichlorobenzene	9.90E-02	2.50E-02	0	1
1,2-Dichloroethane	5.65E+00	1.00E-02	0	0
1,2-Dichloropropane	2.40E+00	2.50E-02	0	0
1,3,5-Trimethylbenzene	NA	1.50E-02	0	0
1,3-Dichlorobenzene	1.42E-01	2.00E-02	0	0
1,4-Dichlorobenzene	9.90E-02	4.00E-02	0	1
2-Butanone (MEK)	NA	2.50E-02	0	0
2-Hexanone	NA	5.00E-02	0	0
4-Methyl-2-pentanone	6.15E+01	3.50E-02	0	0
Acetone	2.82E+02	1.00E-01	0	0
Benzene	1.09E-01	1.00E-02	0	1
Bromodichloromethane	6.40E+00	1.00E-02	0	0
Bromoform	1.22E+00	2.00E-02	0	0
Bromomethane	6.00E-01	2.00E-02	0	0
Carbon disulfide	NA	3.00E-02	0	0
Carbon tetrachloride	1.50E+00	2.50E-02	0	0
Chlorobenzene	1.05E-01	3.00E-02	0	1
Chloroethane	NA	1.50E-02	0	0
Chloroform	4.10E+00	1.00E-02	0	0
Chloromethane	1.35E+01	1.00E-02	0	0
cis-1,2-Dichloroethene	6.80E-01	1.00E-02	0	0
cis-1,3-Dichloropropene	4.00E-02	5.00E-03	0	0
Cyclohexane	NA	1.50E-02	0	0
Dibromochloromethane	6.40E+00	1.50E-02	0	0
Dichlorodifluoromethane	NA	1.50E-02	0	0
Ethylbenzene	2.49E-01	1.50E-02	0	1
Isopropylbenzene (Cumene)	NA	1.50E-02	0	0
Methyl acetate	NA	5.00E-02	0	0
Methyl tert-butyl ether	1.80E+01	1.00E-02	0	0
Methylcyclohexane	NA	1.50E-02	0	0
Methylene chloride	5.42E+00	5.00E-02	0	0
n-Butylbenzene	NA	2.00E-02	0	0
n-Propylbenzene	NA	1.50E-02	0	0
sec-Butylbenzene	NA	1.50E-02	0	0
Styrene	4.55E-01	1.50E-02	0	0
tert-Butylbenzene	NA	1.50E-02	0	0
Tetrachloroethene	1.45E+00	1.50E-02	0	0
Toluene	4.80E-01	1.00E-02	0	0
trans-1,2-Dichloroethene	6.80E-01	1.00E-02	0	0
trans-1,3-Dichloropropene	4.00E-02	1.00E-02	0	0
Trichloroethene	9.70E-01	1.00E-02	0	0
Trichlorofluoromethane	6.40E+00	1.50E-02	0	0
Vinyl chloride	NA	1.00E-02	0	0
Xylenes, total	8.50E-01	1.50E-01	0	1

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1,1,2-Tetrachloroethane	No Detections		0	16	0.00%
1,1,1-Trichloroethane	No Detections		0	16	0.00%
1,1,2,2-Tetrachloroethane	No Detections		0	16	0.00%
1,1,2-Trichlor-1,2,2-trifluoroethane	No Detections		0	16	0.00%
1,1,2-Trichloroethane	No Detections		0	16	0.00%
1,1-Dichloroethane	No Detections		0	16	0.00%
1,1-Dichloroethene	No Detections		0	16	0.00%
1,2,3-Trichlorobenzene	6.10E-03	6.10E-03	1	16	6.25%
1,2,4-Trichlorobenzene	4.50E-02	1.70E-03	3	16	18.75%
1,2,4-Trimethylbenzene	No Detections		0	16	0.00%
1,2-Dibromoethane	No Detections		0	16	0.00%
1,2-Dichlorobenzene	1.20E-01	5.30E-04	4	16	25.00%
1,2-Dichloroethane	1.70E-01	6.90E-04	3	16	18.75%
1,2-Dichloropropane	No Detections		0	16	0.00%
1,3,5-Trimethylbenzene	2.10E-02	2.10E-02	1	16	6.25%
1,3-Dichlorobenzene	7.80E-02	5.80E-04	3	16	18.75%
1,4-Dichlorobenzene	1.00E+00	2.50E-03	4	16	25.00%
2-Butanone	No Detections		0	16	0.00%
2-Hexanone	No Detections		0	16	0.00%
4-Methyl-2-pentanone	No Detections		0	16	0.00%
Acetone	1.80E-02	1.80E-02	1	16	6.25%
Benzene	1.20E-01	3.60E-04	5	16	31.25%
Bromodichloromethane	No Detections		0	16	0.00%
Bromoform	No Detections		0	16	0.00%
Bromomethane	No Detections		0	16	0.00%
Carbon disulfide	No Detections		0	16	0.00%
Carbon tetrachloride	No Detections		0	16	0.00%
Chlorobenzene	1.80E+00	1.10E-03	4	16	25.00%
Chloroethane	No Detections		0	16	0.00%
Chloroform	2.00E-02	9.60E-04	5	16	31.25%
Chloromethane	No Detections		0	16	0.00%
cis-1,2-Dichloroethene	No Detections		0	16	0.00%
cis-1,3-Dichloropropene	No Detections		0	16	0.00%
Cyclohexane	No Detections		0	16	0.00%
Dibromochloromethane	No Detections		0	16	0.00%
Dichlorodifluoromethane	No Detections		0	16	0.00%
Ethylbenzene	6.00E+00	2.60E-03	2	16	12.50%
Isopropylbenzene	No Detections		0	16	0.00%
Methyl acetate	No Detections		0	16	0.00%
Methyl tert-butyl ether	No Detections		0	16	0.00%
Methylcyclohexane	No Detections		0	16	0.00%
Methylene chloride	No Detections		0	16	0.00%
n-Butylbenzene	No Detections		0	16	0.00%
n-Propylbenzene	No Detections		0	16	0.00%
sec-Butylbenzene	No Detections		0	16	0.00%
Styrene	No Detections		0	16	0.00%
tert-Butylbenzene	No Detections		0	16	0.00%
Tetrachloroethene	No Detections		0	16	0.00%
Toluene	3.20E-02	7.90E-04	2	16	12.50%
trans-1,2-Dichloroethene	No Detections		0	16	0.00%
trans-1,3-Dichloropropene	No Detections		0	16	0.00%
Trichloroethene	No Detections		0	16	0.00%
Trichlorofluoromethane	No Detections		0	16	0.00%
Vinyl chloride	No Detections		0	16	0.00%
Xylenes, Total	5.70E+01	1.80E-03	4	16	25.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Volatile Organic Compounds - Sediments[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	2.10E+02	1.10E-03	0	0
1,1,1-Trichloroethane	1.47E+05	9.50E-04	0	0
1,1,2,2-Tetrachloroethane	2.72E+01	1.50E-03	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	1.00E+06	1.30E-03	0	0
1,1,2-Trichloroethane	9.56E+01	9.50E-04	0	0
1,1-Dichloroethane	7.35E+04	9.50E-04	0	0
1,1-Dichloroethene	3.67E+04	9.50E-04	0	0
1,2,3-Trichlorobenzene	4.59E+02	2.10E-03	0	0
1,2,4-Trichlorobenzene	1.53E+03	2.10E-03	0	0
1,2,4-Trimethylbenzene	3.67E+04	2.10E-03	0	0
1,2-Dibromoethane	2.72E+00	9.50E-04	0	0
1,2-Dichlorobenzene	6.61E+04	1.90E-03	0	0
1,2-Dichloroethane	5.99E+01	1.10E-03	0	0
1,2-Dichloropropane	8.01E+01	1.50E-03	0	0
1,3,5-Trimethylbenzene	3.67E+04	1.50E-03	0	0
1,3-Dichlorobenzene	2.20E+04	2.10E-03	0	0
1,4-Dichlorobenzene	2.27E+02	1.90E-03	0	0
2-Butanone (MEK)	4.41E+05	2.50E-03	0	0
2-Hexanone	4.41E+04	2.70E-03	0	0
4-Methyl-2-pentanone	5.88E+04	3.80E-03	0	0
Acetone	6.61E+05	5.90E-03	0	0
Benzene	9.91E+01	9.50E-04	0	0
Bromodichloromethane	8.79E+01	9.50E-04	0	0
Bromoform	6.90E+02	1.10E-03	0	0
Bromomethane	1.03E+03	1.90E-03	0	0
Carbon disulfide	7.35E+04	1.10E-03	0	0
Carbon tetrachloride	4.19E+01	1.10E-03	0	0
Chlorobenzene	1.47E+04	1.10E-03	0	0
Chloroethane	2.94E+05	1.50E-03	0	0
Chloroform	7.35E+03	9.50E-04	0	0
Chloromethane	4.19E+02	9.50E-04	0	0
cis-1,2-Dichloroethene	7.35E+03	1.50E-03	0	0
cis-1,3-Dichloropropene	7.35E+01	9.50E-04	0	0
Cyclohexane	1.00E+06	1.90E-03	0	0
Dibromochloromethane	6.49E+01	9.50E-04	0	0
Dichlorodifluoromethane	1.47E+05	1.30E-03	0	0
Ethylbenzene	7.35E+04	1.30E-03	0	0
Isopropylbenzene (Cumene)	7.35E+04	1.70E-03	0	0
Methyl acetate	7.35E+05	1.30E-03	0	0
Methyl tert-butyl ether	7.35E+03	9.50E-04	0	0
Methylcyclohexane	1.00E+06	2.30E-03	0	0
Methylene chloride	7.27E+02	1.90E-03	0	0
n-Butylbenzene	6.12E+03	1.10E-03	0	0
n-Propylbenzene	2.94E+04	1.70E-03	0	0
sec-Butylbenzene	2.94E+04	1.90E-03	0	0
Styrene	1.47E+05	1.30E-03	0	0
tert-Butylbenzene	2.94E+04	1.90E-03	0	0
Tetrachloroethene	1.05E+02	1.30E-03	0	0
Toluene	5.88E+04	1.10E-03	0	0
trans-1,2-Dichloroethene	1.47E+04	9.50E-04	0	0
trans-1,3-Dichloropropene	5.45E+01	1.10E-03	0	0
Trichloroethene	4.41E+03	1.10E-03	0	0
Trichlorofluoromethane	2.20E+05	9.50E-04	0	0
Vinyl chloride	3.63E+00	1.50E-03	0	0
Xylenes, total	1.47E+05	4.60E-03	0	0

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	NA	1.10E-03	No PSV	
1,1,1-Trichloroethane	4.13E+00	9.50E-04	0	0
1,1,2,2-Tetrachloroethane	6.30E-01	1.50E-03	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	2.78E+00	1.30E-03	0	0
1,1,2-Trichloroethane	9.80E-01	9.50E-04	0	0
1,1-Dichloroethane	2.32E+00	9.50E-04	0	0
1,1-Dichloroethene	1.87E+00	9.50E-04	0	0
1,2,3-Trichlorobenzene	NA	2.10E-03	No PSV	
1,2,4-Trichlorobenzene	8.80E-01	2.10E-03	0	0
1,2,4-Trimethylbenzene	7.60E-01	2.10E-03	0	0
1,2-Dibromoethane	NA	9.50E-04	No PSV	
1,2-Dichlorobenzene	8.30E-01	1.90E-03	0	0
1,2-Dichloroethane	4.79E+00	1.10E-03	0	0
1,2-Dichloropropane	2.20E+00	1.50E-03	0	0
1,3,5-Trimethylbenzene	7.70E-01	1.50E-03	0	0
1,3-Dichlorobenzene	1.90E-01	2.10E-03	0	0
1,4-Dichlorobenzene	7.70E-01	1.90E-03	0	0
2-Butanone	2.57E+01	2.50E-03	0	0
2-Hexanone	4.70E+00	2.70E-03	0	0
4-Methyl-2-pentanone	1.94E+01	3.80E-03	0	0
Acetone	6.00E+01	5.90E-03	0	0
Benzene	1.60E-01	9.50E-04	0	0
Bromodichloromethane	2.46E+00	9.50E-04	0	0
Bromoform	2.20E-01	1.10E-03	0	0
Bromomethane	8.00E-02	1.90E-03	0	0
Carbon disulfide	1.20E-01	1.10E-03	0	0
Carbon tetrachloride	2.00E-02	1.10E-03	0	0
Chlorobenzene	1.70E-01	1.10E-03	0	0
Chloroethane	NA	1.50E-03	No PSV	
Chloroform	9.40E-01	9.50E-04	0	0
Chloromethane	1.78E+01	9.50E-04	0	0
cis-1,2-Dichloroethene	NA	1.50E-03	No PSV	
cis-1,3-Dichloropropene	2.30E-01	9.50E-04	0	0
Cyclohexane	NA	1.90E-03	No PSV	
Dibromochloromethane	1.60E-01	9.50E-04	0	0
Dichlorodifluoromethane	3.68E+00	1.30E-03	0	0
Ethylbenzene	2.86E+00	1.30E-03	0	0
Isopropylbenzene	8.99E+00	1.70E-03	0	0
Methyl acetate	NA	1.30E-03	No PSV	
Methyl tert-butyl ether	NA	9.50E-04	No PSV	
Methylcyclohexane	NA	2.30E-03	No PSV	
Methylene chloride	7.75E+00	1.90E-03	0	0
n-Butylbenzene	1.09E+00	1.10E-03	0	0
n-Propylbenzene	7.20E-01	1.70E-03	0	0
sec-Butylbenzene	8.80E-01	1.90E-03	0	0
Styrene	1.02E+01	1.30E-03	0	0
tert-Butylbenzene	1.21E+00	1.90E-03	0	0
Tetrachloroethene	1.69E+00	1.30E-03	0	0
Toluene	2.88E+00	1.10E-03	0	0
trans-1,2-Dichloroethene	2.40E+01	9.50E-04	0	0
trans-1,3-Dichloropropene	2.30E-01	1.10E-03	0	0
Trichloroethene	8.40E-01	1.10E-03	0	0
Trichlorofluoromethane	1.69E+00	9.50E-04	0	0
Vinyl chloride	1.96E+00	1.50E-03	0	0
Xylenes, Total	4.00E+00	4.60E-03	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1,1,2-Tetrachloroethane	No Detections		0	6	0.00%
1,1,1-Trichloroethane	No Detections		0	6	0.00%
1,1,2,2-Tetrachloroethane	No Detections		0	6	0.00%
1,1,2-Trichlor-1,2,2-trifluoroethane	No Detections		0	6	0.00%
1,1,2-Trichloroethane	No Detections		0	6	0.00%
1,1-Dichloroethane	No Detections		0	6	0.00%
1,1-Dichloroethene	No Detections		0	6	0.00%
1,2,3-Trichlorobenzene	No Detections		0	6	0.00%
1,2,4-Trichlorobenzene	No Detections		0	6	0.00%
1,2,4-Trimethylbenzene	No Detections		0	6	0.00%
1,2-Dibromoethane	No Detections		0	6	0.00%
1,2-Dichlorobenzene	No Detections		0	6	0.00%
1,2-Dichloroethane	No Detections		0	6	0.00%
1,2-Dichloropropane	No Detections		0	6	0.00%
1,3,5-Trimethylbenzene	No Detections		0	6	0.00%
1,3-Dichlorobenzene	No Detections		0	6	0.00%
1,4-Dichlorobenzene	No Detections		0	6	0.00%
2-Butanone	No Detections		0	6	0.00%
2-Hexanone	No Detections		0	6	0.00%
4-Methyl-2-pentanone	No Detections		0	6	0.00%
Acetone	No Detections		0	6	0.00%
Benzene	No Detections		0	6	0.00%
Bromodichloromethane	No Detections		0	6	0.00%
Bromoform	No Detections		0	6	0.00%
Bromomethane	No Detections		0	6	0.00%
Carbon disulfide	No Detections		0	6	0.00%
Carbon tetrachloride	No Detections		0	6	0.00%
Chlorobenzene	No Detections		0	6	0.00%
Chloroethane	No Detections		0	6	0.00%
Chloroform	No Detections		0	6	0.00%
Chloromethane	No Detections		0	6	0.00%
cis-1,2-Dichloroethene	No Detections		0	6	0.00%
cis-1,3-Dichloropropene	No Detections		0	6	0.00%
Cyclohexane	No Detections		0	6	0.00%
Dibromochloromethane	No Detections		0	6	0.00%
Dichlorodifluoromethane	No Detections		0	6	0.00%
Ethylbenzene	No Detections		0	6	0.00%
Isopropylbenzene	No Detections		0	6	0.00%
Methyl acetate	No Detections		0	6	0.00%
Methyl tert-butyl ether	No Detections		0	6	0.00%
Methylcyclohexane	No Detections		0	6	0.00%
Methylene chloride	No Detections		0	6	0.00%
n-Butylbenzene	No Detections		0	6	0.00%
n-Propylbenzene	No Detections		0	6	0.00%
sec-Butylbenzene	No Detections		0	6	0.00%
Styrene	No Detections		0	6	0.00%
tert-Butylbenzene	No Detections		0	6	0.00%
Tetrachloroethene	No Detections		0	6	0.00%
Toluene	No Detections		0	6	0.00%
trans-1,2-Dichloroethene	No Detections		0	6	0.00%
trans-1,3-Dichloropropene	No Detections		0	6	0.00%
Trichloroethene	No Detections		0	6	0.00%
Trichlorofluoromethane	No Detections		0	6	0.00%
Vinyl chloride	No Detections		0	6	0.00%
Xylenes, Total	No Detections		0	6	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Volatile Organic Compounds - Surface Water[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)[5]	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	NA	3.00E-04	No PSV	
1,1,1-Trichloroethane	9.57E+02	2.00E-04	0	0
1,1,2,2-Tetrachloroethane	4.00E-02	5.00E-04	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	NA	1.00E-03	No PSV	
1,1,2-Trichloroethane	2.95E-01	3.00E-04	0	0
1,1-Dichloroethane	NA	2.00E-04	No PSV	
1,1-Dichloroethene	2.39E+01	2.00E-04	0	0
1,2,3-Trichlorobenzene	NA	4.00E-04	No PSV	
1,2,4-Trichlorobenzene	7.00E-02	5.00E-04	0	0
1,2,4-Trimethylbenzene	NA	3.00E-04	No PSV	
1,2-Dibromoethane	4.24E-03	2.00E-04	0	0
1,2-Dichlorobenzene	4.34E+00	5.00E-04	0	0
1,2-Dichloroethane	5.53E-01	2.00E-04	0	0
1,2-Dichloropropane	2.26E-01	5.00E-04	0	0
1,3,5-Trimethylbenzene	NA	3.00E-04	No PSV	
1,3-Dichlorobenzene	1.45E+00	4.00E-04	0	0
1,4-Dichlorobenzene	1.90E-01	4.00E-04	0	0
2-Butanone (MEK)	9.92E+02	5.00E-04	0	0
2-Hexanone	NA	1.00E-03	No PSV	
4-Methyl-2-pentanone	NA	7.00E-04	No PSV	
Acetone	NA	2.00E-03	No PSV	
Benzene	5.13E-01	2.00E-04	0	0
Bromodichloromethane	3.22E-01	2.00E-04	0	0
Bromoform	2.18E+00	4.00E-04	0	0
Bromomethane	1.50E+00	4.00E-04	0	0
Carbon disulfide	NA	6.00E-04	No PSV	
Carbon tetrachloride	3.05E-02	5.00E-04	0	0
Chlorobenzene	5.20E+00	3.00E-04	0	0
Chloroethane	NA	3.00E-04	No PSV	
Chloroform	7.14E+00	2.00E-04	0	0
Chloromethane	NA	2.00E-04	No PSV	
cis-1,2-Dichloroethene	NA	2.00E-04	No PSV	
cis-1,3-Dichloropropene	2.11E-01	1.00E-04	0	0
Cyclohexane	NA	3.00E-04	No PSV	
Dibromochloromethane	2.39E-01	3.00E-04	0	0
Dichlorodifluoromethane	NA	3.00E-04	No PSV	
Ethylbenzene	7.14E+00	3.00E-04	0	0
Isopropylbenzene (Cumene)	NA	3.00E-04	No PSV	
Methyl acetate	NA	1.00E-03	No PSV	
Methyl tert-butyl ether	NA	2.00E-04	No PSV	
Methylcyclohexane	NA	3.00E-04	No PSV	
Methylene chloride	2.22E+01	1.00E-03	0	0
n-Butylbenzene	NA	4.00E-04	No PSV	
n-Propylbenzene	NA	3.00E-04	No PSV	
sec-Butylbenzene	NA	3.00E-04	No PSV	
Styrene	NA	3.00E-04	No PSV	
tert-Butylbenzene	NA	3.00E-04	No PSV	
Tetrachloroethene	5.25E-01	3.00E-04	0	0
Toluene	1.50E+01	2.00E-04	0	0
trans-1,2-Dichloroethene	1.00E+01	2.00E-04	0	0
trans-1,3-Dichloropropene	2.11E-01	2.00E-04	0	0
Trichloroethene	8.20E-02	2.00E-04	0	0
Trichlorofluoromethane	NA	3.00E-04	No PSV	
Vinyl chloride	2.40E-02	2.00E-04	0	0
Xylenes, total	NA	5.00E-04	No PSV	

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
1,1,1,2-Tetrachloroethane	NA	3.00E-04	No PSV	
1,1,1-Trichloroethane	1.47E+01	2.00E-04	0	0
1,1,2,2-Tetrachloroethane	2.79E+00	5.00E-04	0	0
1,1,2-Trichlor-1,2,2-trifluoroethane	1.24E+00	1.00E-03	0	0
1,1,2-Trichloroethane	5.40E+00	3.00E-04	0	0
1,1-Dichloroethane	1.54E+01	2.00E-04	0	0
1,1-Dichloroethene	9.10E+00	2.00E-04	0	0
1,2,3-Trichlorobenzene	NA	4.00E-04	No PSV	
1,2,4-Trichlorobenzene	3.09E-01	5.00E-04	0	0
1,2,4-Trimethylbenzene	4.62E-01	3.00E-04	0	0
1,2-Dibromoethane	NA	2.00E-04	No PSV	
1,2-Dichlorobenzene	6.60E-01	5.00E-04	0	0
1,2-Dichloroethane	3.77E+01	2.00E-04	0	0
1,2-Dichloropropane	1.12E+01	5.00E-04	0	0
1,3,5-Trimethylbenzene	4.25E-01	3.00E-04	0	0
1,3-Dichlorobenzene	1.53E-01	4.00E-04	0	0
1,4-Dichlorobenzene	6.60E-01	4.00E-04	0	0
2-Butanone	2.54E+02	5.00E-04	0	0
2-Hexanone	3.68E+01	1.00E-03	0	0
4-Methyl-2-pentanone	1.58E+02	7.00E-04	0	0
Acetone	6.07E+02	2.00E-03	0	0
Benzene	2.30E+00	2.00E-04	0	0
Bromodichloromethane	1.30E+01	2.00E-04	0	0
Bromoform	8.97E-01	4.00E-04	0	0
Bromomethane	6.60E-01	4.00E-04	0	0
Carbon disulfide	7.00E-01	6.00E-04	0	0
Carbon tetrachloride	1.80E-01	5.00E-04	0	0
Chlorobenzene	NA	3.00E-04	No PSV	
Chloroethane	NA	3.00E-04	No PSV	
Chloroform	5.34E+00	2.00E-04	0	0
Chloromethane	1.65E+02	2.00E-04	0	0
cis-1,2-Dichloroethene	4.20E+01	2.00E-04	0	0
cis-1,3-Dichloropropene	1.23E+00	1.00E-04	0	0
Cyclohexane	NA	3.00E-04	No PSV	
Dibromochloromethane	7.71E-01	3.00E-04	0	0
Dichlorodifluoromethane	1.18E+01	3.00E-04	0	0
Ethylbenzene	6.54E+00	3.00E-04	0	0
Isopropylbenzene	1.53E+00	3.00E-04	0	0
Methyl acetate	NA	1.00E-03	No PSV	
Methyl tert-butyl ether	1.51E+02	2.00E-04	0	0
Methylcyclohexane	NA	3.00E-04	No PSV	
Methylene chloride	6.60E+01	1.00E-03	0	0
n-Butylbenzene	2.13E-01	4.00E-04	0	0
n-Propylbenzene	3.85E-01	3.00E-04	0	0
sec-Butylbenzene	2.46E-01	3.00E-04	0	0
Styrene	7.52E+00	3.00E-04	0	0
tert-Butylbenzene	2.89E-01	3.00E-04	0	0
Tetrachloroethene	4.70E+00	3.00E-04	0	0
Toluene	8.70E+00	2.00E-04	0	0
trans-1,2-Dichloroethene	6.60E+01	2.00E-04	0	0
trans-1,3-Dichloropropene	1.23E+00	2.00E-04	0	0
Trichloroethene	3.33E+00	2.00E-04	0	0
Trichlorofluoromethane	5.23E+00	3.00E-04	0	0
Vinyl chloride	1.69E+01	2.00E-04	0	0
Xylenes, Total	4.02E+00	5.00E-04	0	0

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
1,1,1,2-Tetrachloroethane	No Detections		0	2	0.00%
1,1,1-Trichloroethane	No Detections		0	2	0.00%
1,1,2,2-Tetrachloroethane	No Detections		0	2	0.00%
1,1,2-Trichlor-1,2,2-trifluoroethane	No Detections		0	2	0.00%
1,1,2-Trichloroethane	No Detections		0	2	0.00%
1,1-Dichloroethane	No Detections		0	2	0.00%
1,1-Dichloroethene	No Detections		0	2	0.00%
1,2,3-Trichlorobenzene	No Detections		0	2	0.00%
1,2,4-Trichlorobenzene	No Detections		0	2	0.00%
1,2,4-Trimethylbenzene	No Detections		0	2	0.00%
1,2-Dibromoethane	No Detections		0	2	0.00%
1,2-Dichlorobenzene	No Detections		0	2	0.00%
1,2-Dichloroethane	No Detections		0	2	0.00%
1,2-Dichloropropane	No Detections		0	2	0.00%
1,3,5-Trimethylbenzene	1.30E-03	8.60E-04	2	2	100.00%
1,3-Dichlorobenzene	No Detections		0	2	0.00%
1,4-Dichlorobenzene	No Detections		0	2	0.00%
2-Butanone	No Detections		0	2	0.00%
2-Hexanone	No Detections		0	2	0.00%
4-Methyl-2-pentanone	No Detections		0	2	0.00%
Acetone	5.50E-03	5.50E-03	1	2	50.00%
Benzene	No Detections		0	2	0.00%
Bromodichloromethane	No Detections		0	2	0.00%
Bromoform	No Detections		0	2	0.00%
Bromomethane	No Detections		0	2	0.00%
Carbon disulfide	No Detections		0	2	0.00%
Carbon tetrachloride	No Detections		0	2	0.00%
Chlorobenzene	No Detections		0	2	0.00%
Chloroethane	No Detections		0	2	0.00%
Chloroform	No Detections		0	2	0.00%
Chloromethane	No Detections		0	2	0.00%
cis-1,2-Dichloroethene	No Detections		0	2	0.00%
cis-1,3-Dichloropropene	No Detections		0	2	0.00%
Cyclohexane	No Detections		0	2	0.00%
Dibromochloromethane	No Detections		0	2	0.00%
Dichlorodifluoromethane	No Detections		0	2	0.00%
Ethylbenzene	No Detections		0	2	0.00%
Isopropylbenzene	No Detections		0	2	0.00%
Methyl acetate	No Detections		0	2	0.00%
Methyl tert-butyl ether	No Detections		0	2	0.00%
Methylcyclohexane	No Detections		0	2	0.00%
Methylene chloride	No Detections		0	2	0.00%
n-Butylbenzene	No Detections		0	2	0.00%
n-Propylbenzene	No Detections		0	2	0.00%
sec-Butylbenzene	No Detections		0	2	0.00%
Styrene	No Detections		0	2	0.00%
tert-Butylbenzene	No Detections		0	2	0.00%
Tetrachloroethene	No Detections		0	2	0.00%
Toluene	No Detections		0	2	0.00%
trans-1,2-Dichloroethene	No Detections		0	2	0.00%
trans-1,3-Dichloropropene	No Detections		0	2	0.00%
Trichloroethene	No Detections		0	2	0.00%
Trichlorofluoromethane	No Detections		0	2	0.00%
Vinyl chloride	No Detections		0	2	0.00%
Xylenes, Total	No Detections		0	2	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Volatile Organic Compounds - Notes

1. PSV - Preliminary Screening Value
2. mg/kg - milligrams per kilogram
3. SQL - Sample Quantitation Limit
4. Ecological soil samples only include surface soil depths of 0.0-0.5 feet below ground surface.
5. mg/L - milligrams per liter
6. HH Soil Preliminary Screening Values represent lowest values from:
   (1) TRRP Tier I Residential Protective Concentration Level (PCL), $^{Tot}Soil_{Comb,}$ 30-acre Source Area (30 TAC 350.51(m)); Texas Risk Reduction Program, March 31, 2017. Screening levels for carcinogens adjusted to 10-6 risk.
   (2) Regional Screening Levels, Lower of Risk-Based or MCL-Based SSL http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017.
7. ECO Soil Preliminary Screening Values represent lowest value from:
   (1) TCEQ Soil Benchmarks. August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
   (2) EPA Region V Mammals or Plants, USEPA, 2003
8. HH Sediment Preliminary Screening Values represent lowest values from:
   $^{Tot}Sed_{Comb}$ Protective Concentration Level; Texas Risk Reduction Program, March 31, 2006. Screening levels for carcinogens adjusted to 10-6 risk.
9. ECO Sediment Preliminary Screening Values represent values from:
   Sediment Benchmarks, August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
10. HH Surface Water Preliminary Screening Values represent values from:
    Human Health Risk-Based Exposure Limits (Fish only). May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
11. ECO Surface Water Preliminary Screening Values represent lowest Freshwater Acute values from:
    (1) Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
    (2) Screening Quick Reference Table for Organics in Water, NOAA 2008.
12. HH Groundwater Preliminary Screening Values represent lowest values from:
    (1) Protective Concentration Level; Texas Risk Reduction Program, March 31, 2017. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. Screening levels for carcinogens adjusted to 10-6 risk.
    (2) Regional Screening Levels, Lower of Tapwater or Maximum Contaminant Level, http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017.
13. ECO Groundwater Preliminary Screening Values represent lowest values from:
    (1) Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
    (2) Screening Quick Reference Table for Organics in Water, NOAA 2008.
14. On-property surface water and sediment sample data were also evaluated, but the compounds detected in these media were essentially the same as those compounds detected in on-property soil and groundwater samples. As such, those media were considered in the process after the soil and groundwater data were evaluated to ensure that a compound detected in on-property surface water and sediment was not inadvertently overlooked. Since evaluating those media was not a formal step in the COPC selection process, the applicable rows are not highlighted on this table.
15. Shading colors correspond with shading in Table 2 and identifies the Step that the COPC was eliminated or retained:
    Green shading indicates COPC was eliminated because it was not detected above SQL in soil or groundwater.
    Yellow shading indicates COPC was eliminated because it was not detected above the PSV.
    Pink shading indicates COPC was eliminated because maximum concentration was less than 2 times PSV.
    Orange shading indicates COPC was eliminated because concentrations in perimeter samples were less than PSV.
    Blue shading indicates COPC was retained as a COPC in Iteration 2 sampling.

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Total Petroleum Hydrocarbons - Soil

Human Health PSV[1] Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)[2]	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL[3] exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	8.20E+01	9.90E+01	1	6
>C12-C28	9.60E+01	9.90E+01	0	20
>C28-C35	2.00E+03	9.90E+01	0	0
TPH	NA	9.90E+01	No PSV	

Ecological[4] PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	NA	9.90E+01	No PSV	
>C12-C28	NA	9.90E+01	No PSV	
>C28-C35	NA	9.90E+01	No PSV	
TPH	NA	9.90E+01	No PSV	

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
C6-C12	8.00E+02	1.50E+01	17	308	5.52%
>C12-C28	2.30E+03	1.20E+01	45	312	14.42%
>C28-C35	6.50E+02	1.20E+01	31	308	10.06%
TPH	2.48E+03	1.20E+01	57	309	18.45%

Total Petroleum Hydrocarbons - Groundwater

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	9.80E-01	2.10E-01	0	3
>C12-C28	9.80E-01	2.10E-01	0	1
>C28-C35	9.80E-01	2.10E-01	0	0
TPH	NA	2.10E-01	No PSV	

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	NA	2.10E-01	No PSV	
>C12-C28	NA	2.10E-01	No PSV	
>C28-C35	NA	2.10E-01	No PSV	
TPH	NA	2.10E-01	No PSV	

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
C6-C12	7.80E+01	2.70E-01	3	16	18.75%
>C12-C28	1.20E+00	1.20E+00	1	16	6.25%
>C28-C35	No Detections		0	16	0.00%
TPH	7.80E+01	3.70E+00	3	16	18.75%

Total Petroleum Hydrocarbons - Sediments[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	4.41E+04	1.80E+01	0	0
>C12-C28	1.53E+04	1.80E+01	0	0
>C28-C35	NA	1.80E+01	No PSV	
TPH	NA	1.80E+01	No PSV	

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/kg)	Maximum Sample Quantitation Limit (mg/kg)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	NA	1.80E+01	No PSV	
>C12-C28	NA	1.80E+01	No PSV	
>C28-C35	NA	1.80E+01	No PSV	
TPH	NA	1.80E+01	No PSV	

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/kg)	Minimum Detected Concentration (mg/kg)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
C6-C12	No Detections		0	6	0.00%
>C12-C28	No Detections		0	6	0.00%
>C28-C35	No Detections		0	6	0.00%
TPH	No Detections		0	6	0.00%

Total Petroleum Hydrocarbons - Surface Water[14]

Human Health PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)[5]	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	NA	1.90E-01	No PSV	
>C12-C28	NA	1.90E-01	No PSV	
>C28-C35	NA	1.90E-01	No PSV	
TPH	NA	1.90E-01	No PSV	

Ecological PSV Comparisons				
Chemical of Potential Concern (COPC)	PSVs (mg/L)	Maximum Sample Quantitation Limit (mg/L)	Number of Samples where COPC was not Detected, but SQL Exceeds PSV	Number of Samples where COPC was Detected and Concentration Exceeds PSV
C6-C12	NA	1.90E-01	No PSV	
>C12-C28	NA	1.90E-01	No PSV	
>C28-C35	NA	1.90E-01	No PSV	
TPH	NA	1.90E-01	No PSV	

Summary of Detections					
Chemical of Potential Concern (COPC)	Maximum Detected Concentration (mg/L)	Minimum Detected Concentration (mg/L)	Number of Samples where COPC was Detected	Total Number of Samples	Percent Detection Frequency
C6-C12	No Detections		0	2	0.00%
>C12-C28	No Detections		0	2	0.00%
>C28-C35	No Detections		0	2	0.00%
TPH	No Detections		0	2	0.00%

Attachment 1
Sampling Detection Summary
US Oil Recovery Superfund Site, Pasadena, TX

Total Petroleum Hydrocarbons - Notes

1. PSV - Preliminary Screening Value
2. mg/kg - milligrams per kilogram
3. SQL - Sample Quantitation Limit
4. Ecological soil samples only include surface soil depths of 0.0-0.5 feet below ground surface.
5. mg/L - milligrams per liter
6. HH Soil Preliminary Screening Values represent lowest values from:
   (1) TRRP Tier I Residential Protective Concentration Level (PCL), $^{Tot}Soil_{Comb,}$ 30-acre Source Area (30 TAC 350.51(m)); Texas Risk Reduction Program, March 31, 2017. Screening levels for carcinogens adjusted to 10-6 risk.
   (2) Regional Screening Levels, Lower of Risk-Based or MCL-Based SSL http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017.
7. ECO Soil Preliminary Screening Values represent value from:
   Soil Benchmarks. August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
8. HH Sediment Preliminary Screening Values represent lowest values from:
   $^{Tot}Sed_{Comb}$ Protective Concentration Level; Texas Risk Reduction Program, March 31, 2006. Screening levels for carcinogens adjusted to 10-6 risk.
9. ECO Sediment Preliminary Screening Values represent values from:
   Sediment Benchmarks, August 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
10. HH Surface Water Preliminary Screening Values represent values from:
    Human Health Risk-Based Exposure Limits (Fish only). May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
11. ECO Surface Water Preliminary Screening Values represent Freshwater Acute values from:
    Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
12. HH Groundwater Preliminary Screening Values represent lowest values from:
    (1) Protective Concentration Level; Texas Risk Reduction Program, March 31, 2017. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. Screening levels for carcinogens adjusted to 10-6 risk.
    (2) Regional Screening Levels, Lower of Tapwater or Maximum Contaminant Level, http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm, November 2017.
13. ECO Groundwater Preliminary Screening Values represent lowest values from:
    Aquatic Life Risk-Based Exposure Limits. May 2014. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html
14. On-property surface water and sediment sample data were also evaluated, but the compounds detected in these media were essentially the same as those compounds detected in on-property soil and groundwater samples. As such, those media were considered in the process after the soil and groundwater data were evaluated to ensure that a compound detected in on-property surface water and sediment was not inadvertently overlooked. Since evaluating those media was not a formal step in the COPC selection process, the applicable rows are not highlighted on this table.
15. Shading colors correspond with shading in Table 2 and identifies the Step that the COPC was eliminated or retained:
    Green shading indicates COPC was eliminated because it was not detected above SQL in soil or groundwater.
    Yellow shading indicates COPC was eliminated because it was not detected above the PSV.
    Pink shading indicates COPC was eliminated because maximum concentration was less than 2 times PSV.
    Blue shading indicates COPC was retained as a COPC in Iteration 2 sampling.

Attachment 2
Halo Figures for Compounds Eliminated in Step 5

Notes:
1. The Max HQ is the hazard quotient that represents the highest exceedance in that boring.
HQ calculations are presented on Table 4.

LEGEND

PSV = 70 mg/kg

<= PSV

> PSV, <= 2xPSV

> 2xPSV

Fenceline

Pipeline

Property Boundary

SB-64
SB-63
SB-62
SB-92
SB-58
Bioreactor Release Area (Approx.) March 14, 2008
SB-93
SB-61
SB-95
SB-57
SB-94
SB-59
MW-9
SB-60
SB-82
SB-80
SB-81
SB-119
SB-79
SB-32
MW-10
SB-33
SB-[illegible]
MW-11
SB-110
SB-28
SB-30
MW-12
SB-34
MW-15
SB-56
SB-78
SB-46
Location of Former Bioreactor
SB-89
SB-31
SB-27
MW-8
SB-90
SB-35
SB-120
SB-45
SB-36
SB-91
SB-109
SB-77
Location of Former Sludge Bed
SB-55
MW-16
SB-26
SB-107
MW-7
SB-25
Buried Culvert (24")
Former Tank Farm (Approx.)
SB-24
MAX HQ=3
Former Valut w/ Tank (Approx.)
SB-67
SB-108
SB-76
MW-6
SB-23
SB-54
SB-37
SB-22
SB-68
SB-38
SB-39
SB-21
SB-96
SB-40
SB-75
SB-41
SB-53
SB-20
Containment Pond
SB-97
MW-5
SB-42
SB-52
Former Buried Waste Pit (Approx.)
SB-50
SB-43
SB-51
SB-19
SB-49
SB-98
SB-44
MW-4
SB-18
SB-15
SB-17
SB-71
SB-99
SB-65
SB-13
MW-13
SB-16
SB-12
SB-72
SB-85
SB-14
SB-48
SB-11
SB-112
MW-3
SB-86
SB-66
SB-102J
SB-10
SB-9
SB-73
Possible Historic Burial Pit (Approx.)
SB-87
MW-14
SB-47
SB-88
SB-74
SB-4
4" PVC Above Ground Pipeline
SB-106
SB-8
SB-105
SB-2
SB-1
SB-7
MW-2
SB-3
MW-1
SB-6
SB-84
SB-69
SB-5
SB-70
SB-83

N

0 50 100 200 Feet

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US Oil Recovery Superfund Site
Pasadena, Harris County, Texas

COPPER CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)

Attachment 2
Figure 1

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Notes:
1. The Max HQ is the hazard quotient that represents the highest exceedance in that boring.
HQ calculations are presented on Table 4.

LEGEND

PSV = 0.0087 mg/kg

ND

> 2xPSV

Fenceline

Pipeline

Property Boundary

SB-64
SB-63
Bioreactor Release Area (Approx.) March 14, 2008
SB-92
SB-62
SB-58
SB-93
SB-61
SB-95
SB-57
SB-94
SB-59
MW-9
SB-60
SB-80
SB-82
SB-119
SB-79
SB-81
SB-32
MW-10
SB-33
SB-29
MW-11
SB-30
MW-12
SB-110
SB-28
SB-34
MW-15
SB-78
SB-46
SB-56
Location of Former Bioreactor
SB-89
SB-31
SB-27
SB-90
MW-8
MAX HQ=2
SB-45
SB-120
MAX HQ=4
SB-35
SB-91
SB-36
SB-77
SB-109
Location of Former Sludge Bed
SB-107
MW-7
SB-26
SB-25
Buried Culvert (24")
Former Tank Farm (Approx.)
SB-24
SB-108
Former Valut w/ Tank (Approx.)
SB-76
SB-67
MW-6
SB-23
SB-54
SB-37
SB-22
SB-38
SB-68
SB-39
SB-21
SB-96
SB-40
MAX HQ=21
SB-75
SB-41
SB-53
SB-20
Containment Pond
MW-5
SB-97
SB-42
SB-52
Former Buried Waste Pit (Approx.)
SB-50
SB-43
SB-51
SB-19
SB-44
SB-98
SB-49
MW-4
SB-18
SB-17
SB-15
SB-71
SB-99
SB-13
SB-65
MW-13
SB-16
SB-12
SB-72
SB-85
SB-14
SB-48
MW-3
SB-11
SB-112
SB-86
MAX HQ=24
SB-66
SB-102J
SB-10
SB-9
SB-73
Possible Historic Burial Pit (Approx.)
SB-87
MW-14
SB-88
SB-74
SB-47
SB-4
4" PVC Above Ground Pipeline
SB-106
SB-105
SB-2
SB-8
SB-1
SB-7
MW-2
SB-3
SB-6
MW-1
SB-84
SB-83
SB-69
SB-5
SB-70

0 50 100 200 Feet

N

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US Oil Recovery Superfund Site
Pasadena, Harris County, Texas

DICAMBA CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)

Attachment 2
Figure 2

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Notes:
1. Groundwater sample collected from MW-10 (HQ=6) exceeded two times the PSV for Methoxychlor.

LEGEND

- PSV = 270 mg/kg
- ND
- <= PSV
- Fenceline
- Pipeline
- Property Boundary

SB-64, SB-63, SB-92, SB-62, SB-58, SB-93, SB-61, SB-95, SB-57, SB-94, SB-59, MW-9, SB-60, SB-80, SB-81, SB-119, SB-79, SB-82, MW-11, SB-32, MW-10, SB-33, SB-30, SB-29, SB-110, SB-28, MW-12, MW-15, SB-34, SB-56, SB-78, SB-46, SB-89, SB-31, SB-27, SB-90, MW-8, SB-45, SB-35, SB-120, SB-91, SB-36, SB-77, SB-109, SB-107, MW-7, SB-26, SB-25, SB-24, SB-108, SB-76, SB-67, MW-6, SB-23, SB-54, SB-37, SB-22, SB-38, SB-39, SB-68, SB-21, SB-96, SB-40, SB-75, SB-20, SB-41, SB-53, MW-5, SB-97, SB-42, SB-52, SB-43, SB-51, SB-50, SB-19, SB-44, MW-4, SB-98, SB-49, SB-18, SB-15, SB-17, SB-71, SB-99, SB-13, SB-65, MW-13, SB-16, SB-12, SB-72, SB-85, SB-14, SB-48, MW-3, SB-11, SB-112, SB-86, SB-66, SB-102J, SB-10, SB-9, SB-73, SB-87, MW-14, SB-74, SB-47, SB-88, SB-4, SB-106, SB-105, SB-8, SB-1, SB-2, SB-7, MW-2, SB-3, MW-1, SB-6, SB-84, SB-83, SB-69, SB-5, SB-70

Bioreactor Release Area (Approx.) March 14, 2008

Location of Former Bioreactor

Location of Former Sludge Bed

Former Tank Farm (Approx.)

Buried Culvert (24")

Former Valut w/ Tank (Approx.)

Containment Pond

Former Buried Waste Pit (Approx.)

Possible Historic Burial Pit (Approx.)

4" PVC Above Ground Pipeline

0 50 100 200 Feet

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US Oil Recovery Superfund Site
Pasadena, Harris County, Texas

METHOXYCHLOR CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)

Attachment 2
Figure 3

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Notes:
1. The Max HQ is the hazard quotient that represents the highest exceedance in that boring.
HQ calculations are presented on Table 4.

LEGEND

PSV = 0.0994 mg/kg

- ND
- <= PSV
- > 2xPSV
- Fenceline
- Pipeline
- Property Boundary

SB-64, SB-63, SB-62, SB-92, SB-58, SB-93, SB-61, SB-95, SB-57, SB-94, SB-59, MW-9, SB-60, SB-82, SB-79, SB-80, SB-81, SB-32, MW-10, SB-119, SB-29, MW-11, SB-33, MAX HQ=10, SB-30, SB-110, SB-28, MW-12, SB-34, MW-15, SB-78, SB-46, SB-56, SB-89, SB-31, SB-27, SB-90, MW-6, SB-120, SB-91, SB-45, SB-35, SB-36, SB-109, SB-77, SB-107, MW-7, SB-55, MW-16, SB-26, SB-25, SB-108, SB-67, SB-24, SB-76, MW-8, SB-23, SB-54, SB-37, SB-22, SB-68, SB-38, SB-39, SB-21, SB-96, SB-75, SB-40, SB-41, SB-97, SB-53, SB-20, MW-5, SB-42, SB-52, SB-43, SB-51, SB-50, SB-19, SB-44, MW-4, SB-98, SB-49, SB-18, SB-17, SB-15, SB-71, SB-99, SB-65, SB-13, MW-13, SB-16, SB-85, SB-12, SB-72, SB-14, SB-48, MW-3, SB-112, SB-86, SB-66, SB-102J, SB-10, SB-9, SB-73, SB-87, MW-14, SB-88, SB-74, SB-47, SB-4, SB-106, SB-105, SB-2, SB-8, SB-1, SB-7, MW-2, SB-3, MW-1, SB-6, SB-84, SB-5, MAX HQ=29, SB-83, SB-70, SB-69

Bioreactor Release Area (Approx.) March 14, 2008

Location of Former Bioreactor

Location of Former Sludge Bed

Buried Culvert (24")

Former Tank Farm (Approx.)

Former Valut w/ Tank (Approx.)

Containment Pond

Former Buried Waste Pit (Approx.)

Possible Historic Burial Pit (Approx.)

4" PVC Above Ground Pipeline

0 50 100 200 Feet

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US Oil Recovery Superfund Site
Pasadena, Harris County, Texas

DIBENZOFURAN CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)

Attachment 2
Figure 4

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Notes:
1. Groundwater samples collected from MW-7 (HQ=18) and MW-8 (HQ=34) exceeded two times the PSV for 1,2 dichloroethane.

LEGEND

PSV = 0.46 mg/kg

ND

Fenceline

Pipeline

Property Boundary

SB-64
SB-63
Bioreactor Release Area (Approx.) March 14, 2008
SB-92
SB-62
SB-58
SB-93
SB-61
SB-95
SB-57
SB-94
SB-59
MW-9
SB-60
SB-80
SB-82
SB-119
SB-79
SB-81
SB-32
MW-10
SB-33
MW-11
SB-29
SB-30
MW-12
SB-110
SB-28
SB-34
MW-15
SB-78
SB-46
SB-56
Location of Former Bioreactor
SB-89
SB-27
SB-31
MW-8
SB-90
SB-45
SB-35
SB-120
SB-91
SB-36
SB-77
SB-109
Location of Former Sludge Bed
SB-107
MW-7
SB-26
SB-25
Buried Culvert (24")
Former Tank Farm (Approx.)
SB-24
SB-108
Former Valut w/ Tank (Approx.)
SB-76
SB-67
MW-6
SB-23
SB-54
SB-37
SB-22
SB-38
SB-68
SB-39
SB-21
SB-96
SB-40
SB-75
SB-41
SB-53
SB-20
Containment Pond
MW-5
SB-97
SB-42
SB-52
Former Buried Waste Pit (Approx.)
SB-50
SB-43
SB-51
SB-19
SB-44
SB-98
SB-49
MW-4
SB-18
SB-17
SB-15
SB-71
SB-99
SB-13
SB-65
MW-13
SB-16
SB-12
SB-72
SB-85
SB-14
MW-3
SB-11
SB-48
SB-112
SB-86
SB-66
SB-102J
SB-10
SB-9
Possible Historic Burial Pit (Approx.)
SB-73
SB-87
MW-14
SB-88
SB-74
SB-47
SB-4
4" PVC Above Ground Pipeline
SB-106
SB-105
SB-2
SB-8
SB-1
SB-7
MW-2
SB-3
SB-6
MW-1
SB-84
SB-83
SB-69
SB-5
SB-70

0 50 100 200 Feet

N

Reviewed By:

EHS Support consider it done

US Oil Recovery Superfund Site
Pasadena, Harris County, Texas

1,2-DICHLOROETHANE CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)

Attachment 2
Figure 5

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Notes:
1. The Max HQ is the hazard quotient that represents the highest exceedance in that boring.
HQ calculations are presented on Table 4.

LEGEND

PSV = 5.16 mg/kg

- ND
- <= PSV
- > PSV, <= 2xPSV
- > 2xPSV
- Fenceline
- Pipeline
- Property Boundary

SB-64
SB-63
Bioreactor Release Area (Approx.) March 14, 2008
SB-92
SB-62
SB-58
SB-93
SB-61
SB-95
SB-57
SB-94
SB-59
MW-9
SB-60
SB-80
SB-81
SB-119
SB-79
SB-82
SB-33
SB-32
MW-10
MW-11
SB-29
SB-30
SB-110
MW-12
MW-15
SB-28
SB-46
SB-78
SB-34
SB-56
Location of Former Bioreactor
SB-89
SB-27
SB-90
SB-31
MW-8
SB-45
SB-35
SB-120
SB-91
SB-36
SB-77
SB-109
Location of Former Sludge Bed
SB-107
MW-7
SB-26
SB-25
Buried Culvert (24")
Former Tank Farm (Approx.)
SB-24
SB-108
Former Valut w/ Tank (Approx.)
SB-76
SB-67
MW-6
SB-23
SB-54
SB-37
SB-22
SB-38
SB-68
SB-39
SB-21
SB-96
SB-40
SB-75
SB-41
SB-53
Containment Pond
SB-20
MW-5
SB-97
SB-42
SB-52
Former Buried Waste Pit (Approx.)
SB-50
SB-43
SB-51
SB-19
SB-44
SB-98
SB-49
MW-4
SB-17
SB-15
SB-18
MAX HQ=17
SB-71
SB-99
SB-13
SB-65
MW-13
SB-16
SB-12
SB-72
MAX HQ=14
SB-14
SB-48
MW-3
SB-11
SB-112
SB-86
SB-66
SB-102J
SB-10
SB-9
Possible Historic Burial Pit (Approx.)
SB-73
SB-87
MW-14
SB-74
SB-47
SB-88
SB-4
4" PVC Above Ground Pipeline
SB-106
SB-105
SB-8
SB-1
SB-2
SB-7
MW-2
SB-3
SB-6
MW-1
SB-84
SB-83
SB-69
SB-5
SB-70

0 50 100 200 Feet

Reviewed By:

EHS Support consider it done

US Oil Recovery Superfund Site
Pasadena, Harris County, Texas

ETHYLBENZENE CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)

Attachment 2
Figure 6

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Notes:
1. The Max HQ is the hazard quotient that represents the highest exceedance in that boring.
HQ calculations are presented on Table 4.

LEGEND

- PSV = 10 mg/kg
- ND
- <= PSV
- > 2xPSV
- Fenceline
- Pipeline
- Property Boundary

SB-64, SB-63, SB-92, SB-62, SB-58, SB-93, SB-61, SB-95, SB-57, SB-94, SB-59, SB-60, SB-80, SB-81, SB-119, SB-79, SB-82, SB-32, SB-33, SB-29, SB-30, SB-110, SB-28, SB-34, SB-78, SB-46, SB-89, SB-31, SB-90, SB-27, SB-91, SB-45, SB-36, SB-35, SB-120, SB-77, SB-109, SB-107, SB-26, SB-25, SB-24, SB-108, SB-76, SB-67, SB-23, SB-54, SB-37, SB-22, SB-38, SB-68, SB-39, SB-21, SB-96, SB-75, SB-40, SB-53, SB-41, SB-20, SB-97, SB-42, SB-52, SB-43, SB-51, SB-50, SB-19, SB-44, SB-98, SB-49, SB-17, SB-15, SB-18, SB-71, SB-99, SB-13, SB-65, SB-16, SB-12, SB-72, SB-14, SB-48, SB-112, SB-86, SB-66, SB-102J, SB-10, SB-9, SB-73, SB-87, SB-74, SB-47, SB-88, SB-4, SB-106, SB-105, SB-8, SB-1, SB-2, SB-3, SB-7, SB-6, SB-84, SB-83, SB-69, SB-5, SB-70

MW-9, MW-11, MW-10, MW-12, MW-15, SB-56, MW-6, MW-7, SB-116, MW-5, MW-4, MW-13, MW-3, MW-14, MW-2, MW-1

MAX HQ=4

MAX HQ=78

MAX HQ=74

Bioreactor Release Area (Approx.) March 14, 2008

Location of Former Bioreactor

Location of Former Sludge Bed

Former Tank Farm (Approx.)

Buried Culvert (24")

Former Valut w/ Tank (Approx.)

Containment Pond

Former Buried Waste Pit (Approx.)

Possible Historic Burial Pit (Approx.)

4" PVC Above Ground Pipeline

0 50 100 200 Feet

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EHS Support *consider it done*	US Oil Recovery Superfund Site Pasadena, Harris County, Texas	XYLENES, TOTAL CONCENTRATIONS IN SOIL SAMPLES (ALL DEPTHS)	Attachment 2 Figure 7

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